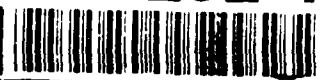


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APRIL 1991

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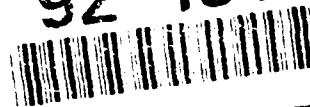
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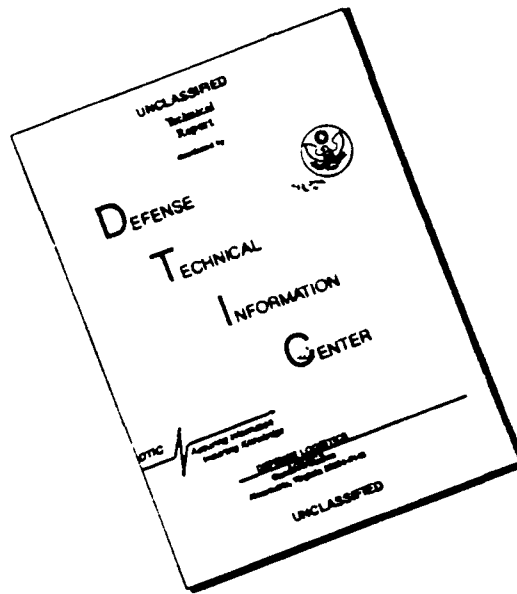


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Desert Shield/Desert Storm

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LOGISTICS: The Art of the Possible

In his introduction to *Supplying War: Logistics From Wallenstein to Patton*, Martin van Creveld applied our headline, taken from Henri Jomini, to the art of supplying and transporting armies. He added that "... surely what is possible is determined not merely by numerical strengths, doctrine, intelligence, arms and tactics, but, in the first place, by the hardest facts of all: those concerning requirements, supplies available and expected, organization and administration, transportation and arteries of communication."

Desert Shield and *Desert Storm* demonstrate that the often mundane and detail-ridden world of combat service support is the very lifeblood of an army, especially an army called to deploy halfway around the world to a hostile environment. Further, these challenges must be met before combat power can be brought to bear and well after the dust of battle has cleared. In our future versatile, deployable, lethal Army, logistics will play an even greater role.

The image used for the cover of our issue on logistics and sustainment was carefully chosen. So, too, were the pictures for our inside back cover. In many cases, typical images for such a topic are long lines of trucks at a supply depot, a dock full of tanks at port, an air resupply point in the field or rows upon rows of cargo on pallets at a distribution center. While it is hard to imagine the length and breadth of the *Desert Shield/Desert Storm* logistics effort, the common denominator is the fact that the logistics plan was only as good as the people who designed, operated and adjusted it. All along the line, the people proved themselves to be without equal, showing, as one editorialist put it, "the American genius for supply and support."

In this issue, we offer a few thoughts by logisticians and soldiers who populate or consider this decidedly unsexy, though essential, world of logistics. Herculean sustainment efforts may often be lost in the wake of the tactical result. How else would the light of the epoch logistic contributions of the Vietnam War—and they were tremendous—be hidden under the bushel of the final outcome? Though success of the logistics effort gets its context from success on the battlefield, the latter can only be made possible by the former. The final score sometimes detracts from the excellent support that is rendered. Only if the team gets to the stadium in time, with the proper equipment, can the game be played at all.

As another writer said, "All those supply depots and hospitals don't just spring up. They come from years of planning and training." And we might add, from just plain hard work, good old American ingenuity and grinding effort by the entire chain of support. The war of sustainment is still being waged. Only when the last soldier returns to his pre-*Desert Shield* duties can victory be truly declared. If anything, the sustainment challenges now are even greater. If you have ever tried to turn in tons and tons of uncrated ammunition at an ammunition supply point, you will get the general idea.

This month, we offer World War II Almanac, a new department that, during the next five years, will become a recurring feature. *Military Review*, as the Army's professional journal, will join in commemorating the war by recalling as many World War II-related topics as possible while still covering current Army issues.

World War II Almanac will be presented as brief essays (1,500 to 2,000 words) on political, military, technical or social aspects of the conflict. In general, these essays will be suggested by the 50th anniversary of the subject and are intended to supplement full feature articles about the war. These articles will focus on people, events (including battles, invasions and campaigns), equipment and ideas or trends that played an important role in the war. To begin the series, we look at the lowly steel pot that honorably served three generations of soldiers. You, as our readers, have a role in this project since we will have an increased need for manuscripts on World War II-related topics. Give us your ideas and, especially, your written effort as we continue our commemoration of "The Big One."

SFR

CASCOM

Support for Desert Shield/

Desert Storm

In the months and years ahead, the fantastic success of Operations Desert Shield and Desert Storm will be analyzed in every conceivable way. While it appears certain that operational plans and tactical execution will receive much attention, it will serve our Army well for equal attention to be devoted to the herculean effort of the entire logistics community, beginning with the first deploying units and continuing today. The following articles offer insights to the support provided by one of the vital stateside commands, the US Army Combined Arms Support Command, Fort Lee, Virginia, in the unprecedented deployment of forces and buildup of supplies and equipment in the distant Gulf Theater.

More than 690 military, civilian and contractor personnel representing the CASCOM and its associated schools were deployed in-theater, and many are still there providing functional and operational assistance and expertise.

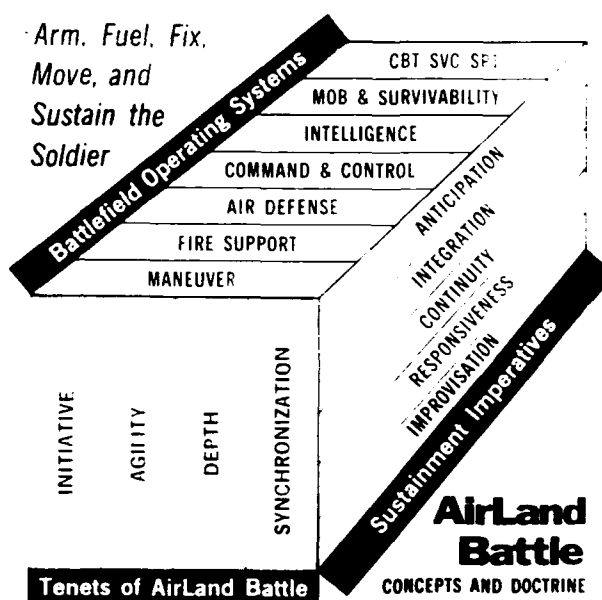
of a CSS force tailored to meet the challenge.

The Transportation Center and School, Fort Eustis, Virginia, assisted in developing and executing distribution plans that incorporated the efficiencies of the latest doctrine, organizations and materiel. In the largest deployment since World War II, transportation terminal service elements were among the first to deploy in order to receive follow-on deployments of personnel and equipment. They continue to provide responsive port support to the remaining forces. Likewise, watercraft units, which have been supporting theater water-terminal operations as part of an integrated transportation system, provided barge-mounted water purification equipment in anticipation of the large demand for this vital commodity in a desert environment.

The Quartermaster Center and School, Fort Lee, Virginia, developed a graves registration system for the theater of operation and provided the initial leadership to operate it. A Quartermaster School mobile training team also accompanied the XVIII Airborne Corps' 1st Corps Support Command (COSCOM) in mid-August to provide training and assistance in operating the reverse osmosis water purification units and assisted Army Forces US Central Command

(ARCENT) in water-support planning. The schools also helped develop, with ARCENT and the Department of the Army (DA), deputy chief of staff for logistics, the plan for the theaterwide petroleum distribution.

The Soldier Support Center, Fort Benjamin Harrison, Indiana, and the Academy of Health Sciences, Fort Sam Houston, Texas, provided assistance in establishing strength management, and postal and medical sustainment systems. A team from CASCOM and the Information Systems Command's Design Center-Lee deployed to provide customer assistance and programming support for all automated logistics systems,



including those recently under test. This combined civilian and military team remains in-theater today, providing training, fielding and customer support to users at every level. In all, more than 690 military, civilian and contractor

CAC's Sister Integrating Command

The US Army Combined Arms Support Command (CASCOM) was established on 2 October 1990 under the US Army Training and Doctrine Command (TRADOC). CASCOM is the result of merging combat development and training development integrating functions previously performed by the US Army Logistics Center and the US Army Soldier Support Center. CASCOM's basic mission is to perform and coordinate the combat develop-

ment, training development and institutional training missions for combat service support (CSS). Formation of CASCOM focused the responsibility for the CSS battlefield operating system into one command. CASCOM assumed operational control of the Army Logistics Management College (ALMC) on 1 January 1991. ALMC will be fully integrated into TRADOC as part of CASCOM on 1 October 1991.

Total Army CSS

Providing the Means for Victory

Lieutenant General Leon E. Salomon, US Army, and
Lieutenant Colonel Harold Bankirer, US Army

AS THE world watched the success of coalition forces in the Persian Gulf, the unprecedented projection and sustainment of US military power that contributed to this success can only be labeled spectacular. Operations *Desert Shield* and *Desert Storm* represent the largest deployment of Army forces since World War II and the validation of our AirLand Battle doctrine and years of force modernization. They also represent the ultimate tribute to our professional. Total Army, combat service support (CSS) force.

The US Army Combined Arms Support Command (CASCOM) and its associated schools have been actively involved in supporting both *Desert Shield* and *Desert Storm*. Other articles in this issue provide the details of our major efforts in logistics automation and logistics force structure. The purpose of this article is to present an overview of CASCOM's involvement which sets the stage for a more focused look at the Army's sustainment posture.

As the Army's proponent for CSS doctrine, organizations, training, leader development and materiel requirements (DOTLM), CASCOM faced two challenges as *Desert Shield* and *Desert Storm* unfolded. First, the near-term mission was to provide functional assistance and training to our deploying and deployed units and soldiers; second was the methodical gathering of lessons learned and their incorporation into our DOTLM.

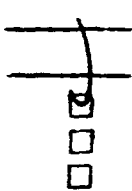
During the five months of *Desert Shield*, the Army deployed 250,000 soldiers and moved more than 3 million tons of equipment and sup-

plies to Saudi Arabia. Throughout this period, Army sustainers established the infrastructure to support two US Army corps and to provide

During the five months of Desert Shield, the Army deployed 250,000 soldiers and moved more than 3 million tons of equipment and supplies. . . . Sustainers established the infrastructure to support two US Army corps and to provide sustainment to the growing theater force. This immense effort demanded total commitment by the Army's CSS force, both Active Component and Reserve Component.

sustainment to the growing theater force. This immense effort demanded total commitment by the Army's CSS force, both Active Component (AC) and Reserve Component (RC).

Early Days. Even as the first Army forces were being alerted for deployment, our CSS systems were in the midst of modernization. The XVIII Airborne Corps was transitioning to a new automated supply system, selected CSS units were meeting new tables of organization and equipment (TOE) requirements and new materiel systems were being fielded. The CASCOM and its associated schools responded to deploying units' needs with mobile training teams and subject matter experts to assist the planning, coordination and rapid mobilization



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More than 690 military, civilian and contractor personnel representing the CASCOT and its associated schools were deployed in-theater, and many are still there providing functional and operational assistance and expertise.

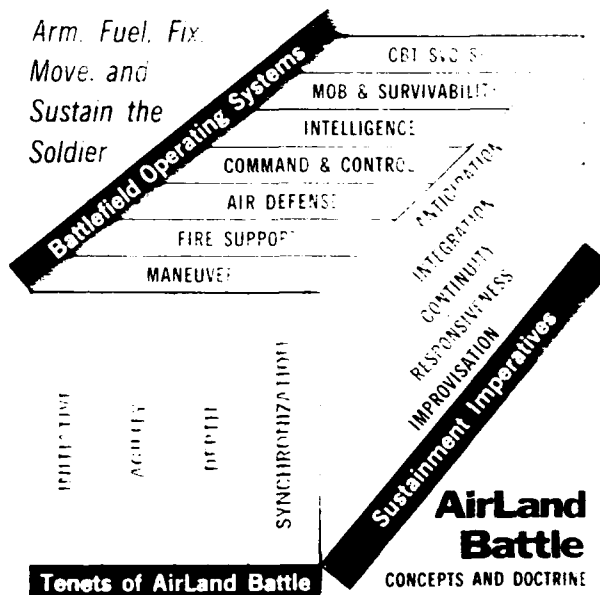
of a CSS force tailored to meet the challenge.

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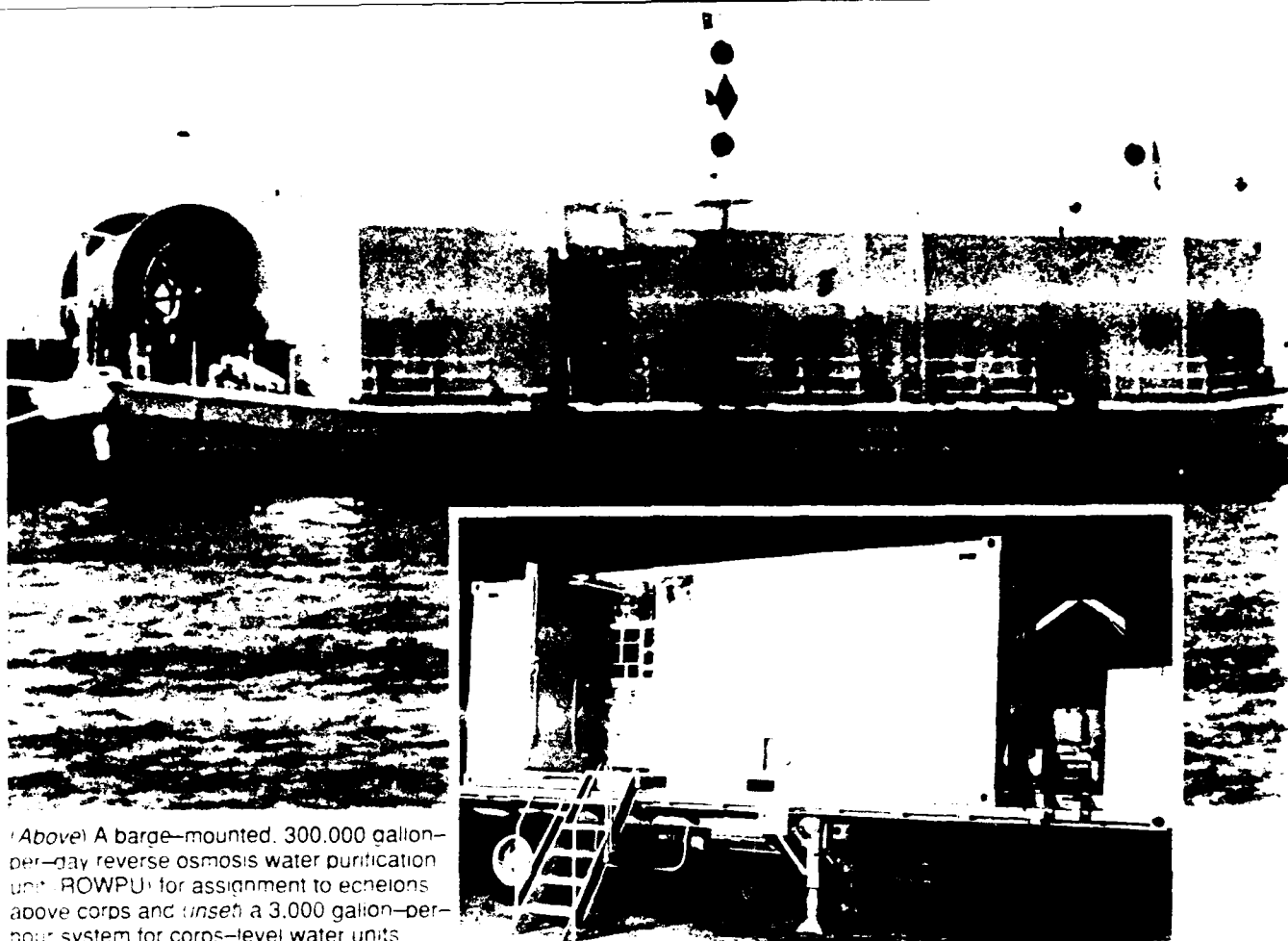


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(Above) A barge-mounted, 300,000 gallon-per-day reverse osmosis water purification unit (ROWPU) for assignment to echelons above corps and (inset) a 3,000 gallon-per-hour system for corps-level water units

Transportation terminal service elements were among the first to deploy in order to receive follow-on deployments of personnel and equipment. They continue to provide responsive port support to the remaining forces. Likewise, watercraft units, which have been supporting theater water-terminal operations as part of an integrated transportation system, provided barge-mounted water purification equipment in anticipation of the large demand for this vital commodity.

personnel representing the CASC COM and its associated schools were deployed in-theater, and many are still there providing functional and operational assistance and expertise.

Our AirLand Battle doctrine designates CSS as one of the seven battlefield operating systems (BOS). The acid test of CSS as an operating system lies in the ability of our IXOTLM to effectively arm, fuel, move and sustain the soldier. These five CSS tasks facilitate the generation of combat power and enable the tenets of AirLand Battle to reappear. However, CSS success extends beyond the ability to properly execute these tasks. Given the enormity of the CSS mission, success in battle is also measured by adherence to the sustainment imperatives of anticipation,

integration, continuity, responsiveness and improvisation, as focused by the IXOTLM for a given theater of operations. These tasks and imperatives have served as our linchpins.

For example, current Army planning factors data estimate that an M1-equipped armored division, with its supporting combat support and CSS slice, will consume approximately 2,900 short tons of ammunition during the first day of a moderate-intensity attack. This translates to a three-division, heavy corps, single day consumption rate of more than 10,000 short tons. Satisfying this appetite dictates the total integration and synchronization of ordnance ammunition storage, transportation transfer and movement, and quartermaster forward supply

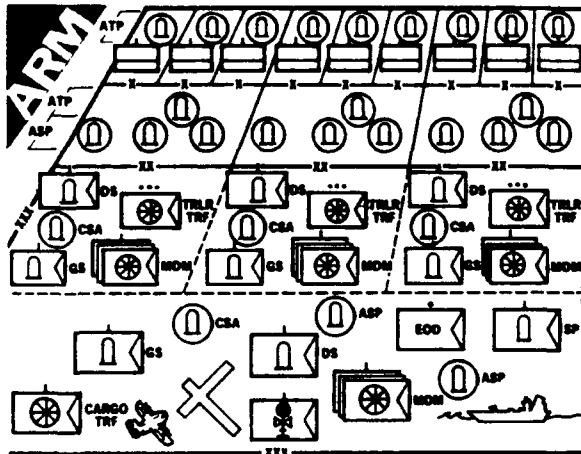
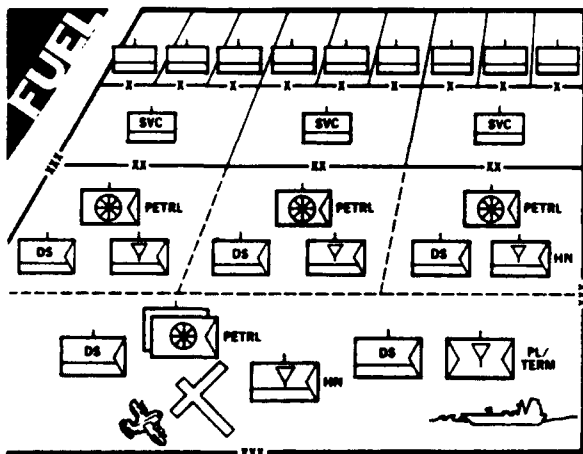
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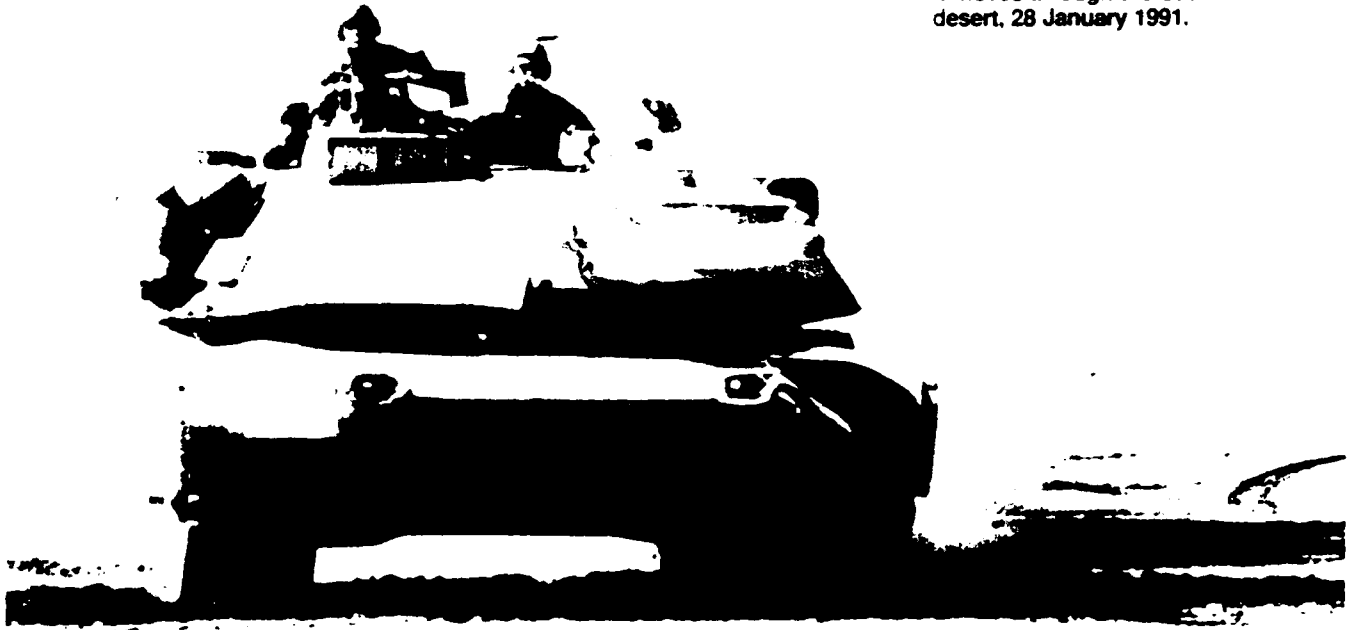
As can be seen, multifunctional logistics concepts and organizations have been extended beyond division level to both deployed corps and, to some extent, theater level. We will gain valuable insights into all aspects of these emerging concepts and weigh their significance as we move toward further extension of multifunctional doctrines to all echelons of the Army. Op-

erations *Desert Shield* and *Desert Storm* required the vigorous application of these sustainment imperatives and CSS tasks. Responding to these principals, sustainers in all of our major commands, the DA and the Defense agencies, identified opportunities and shaped solutions. We have collectively met the challenge and formed an outline for the future.

Training our AC soldiers, an essential US Army Training and Doctrine Command (TRADOC) task, was an ongoing effort during the entire period. CASCOT and the Combined Arms Command (CAC), its sister integrating command, and their schools rapidly geared up to maximize available training time and provided our field forces a steady flow of trained and ready CSS soldiers. The entire training base and the soldiers it serves reacted



A VII Corps M1A1 Abrams
kicks up clouds of dust as
it moves through the Saudi
desert, 28 January 1991.



Sustaining the mobility of modern high-performance air and ground vehicles demands large amounts of fuel—approximately 1.5 million gallons per day for a three-division heavy corps in the attack. To accomplish this, we integrate transportation rail, water and truck movement resources with quartermaster storage and forward supply resources into a sustaining petroleum distribution system.

positively and professionally to the demands placed upon them. Additionally, the schools provided employment and operations training to selected AC and RC units in new or unique water and petroleum materiel systems that were held as operational project stocks for Southwest Asia contingencies. These materiel systems had never before been made available en masse to the training base.

While singularly significant, and in some instances even critical, from a larger perspective, these contributions represent only a small portion of the overall CSS effort that marked the success of *Desert Shield* and *Desert Storm*.

Programs and Systems. At the same time, *Desert Shield* and *Desert Storm* also gave us insights into programs and systems not ordinarily available in a peacetime environment. The need for a responsive supply system provided the opportunity to accelerate the fielding of logistics automation hardware and software systems to AC and RC units in-theater and deploying. The sheer size of the force and the speed with which it was deployed caused us to take a critical

look at the capacities of these systems. Upgrades in system capacities were accomplished, and fixes were implemented that will, no doubt, be extended to long-term upgrades for our most critical CSS management information systems.

The production and distribution of enhanced field rations improved the Army field feeding system. This enhancement was accomplished by introducing the meal operational ready-to-eat (MORE) and the flameless ration heater. The MORE uses off-the-shelf commercial item components. These brand-name items are familiar to our soldiers and have been extremely well received. The flameless ration heater uses a chemical process to heat meal ready-to-eat (MRE) entrees. A soldier pours a few ounces of water in a plastic-type bag, puts in the MRE and has a hot meal in minutes.

The essential role of host nation and contingency contracting has also been reinforced and will, no doubt, play a vital role in any future contingency operation. The critical need for bulk distribution of water drove an accelerated procurement of hard-wall water tankers. This

The need for a responsive supply system provided the opportunity to accelerate the fielding of logistics automation hardware and software systems to AC and RC units in-theater and deploying. The sheer size of the force and the speed with which it was deployed caused us to take a critical look at the capacities of these systems.

Emerging CSS doctrine . . . needs to focus on the anticipation of battlefield sustainment requirements, relief of the combat force logistics burden and sustainment projection forward where and when it is needed. In other words, a distribution-based CSS system . . . is required.

procurement not only enhanced sustainment in-theater but also corrected a materiel deficiency in the Army's water distribution system.

And, appropriately, the AC-RC mix in our CSS force structure will be evaluated, along with the training strategies that support that mix.

Looking to the Future. In the final analysis, CSS doctrine, organization, training, leader development and materiel were on the mark in meeting operational sustainment needs. But our vision must extend beyond the horizons of *Desert Shield* and *Desert Storm*. Even as we begin to close the chapter on *Desert Storm*, TRADOC is fash-

ioning our AirLand Battle doctrine for the future. Our sustainment imperatives remain valid for future land combat force projection. Our CSS tasks remain true. Emerging CSS doctrine, however, needs to focus on the anticipation of battlefield sustainment requirements, relief of the combat force logistics burden and sustainment projection forward where and when it is needed. In other words, a distribution-based CSS system, employing organizations designed and equipped to rapidly project sustainment forward on the battlefield, is required.

Training strategies for both the AC and RC must incorporate advanced distributive technologies, state-of-the-art automation and management systems, and other BOS sophistications. Leader development must continue to address the multifunctional nature of CSS and build a corps of professional sustainers for the future.

Finally, we must continue the materiel modernization of the CSS force. Anticipation necessitates real-time communications and automation systems. Responsiveness necessitates highly mobile, reliable distribution, advanced maintenance diagnostics and repair, and CSS decision support systems. Real-time logistics must become a reality rather than a goal on the AirLand Battle-Future battlefield.

For this CSS soldier and the CASCOM, the hard work continues. *Desert Shield* and *Desert Storm* reaffirmed CSS as an imperative to winning. We should be proud of what our supporters have done and will do, especially those in the gulf. They made a difference; they made things happen and work; they made history. **MR**

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Lieutenant Colonel Harold Bankirer is the deputy chief of staff, US Army Combined Arms Support Command, Fort Lee, Virginia. He received a B.S. from Wayne State University and an M.A. from Central Michigan University and is a graduate of the US Army Command and General Staff College. He has served in various command and staff positions, including commander, 47th Battalion, 1st Armored Division, Ansbach, West Germany.

Logistics Automation Support for Desert Storm

Rheta S. Phillips

THE LOGISTICS Automation Directorate of the US Army Combined Arms Support Command (CASCOM) and the US Army Information Systems Software Development Center Lee (DCL) design, field and maintain tactical automated retail logistics systems.

In summer 1990, CASCOM and DCL personnel were at Fort Bragg, North Carolina, upgrading the XVIII Airborne Corps' retail supply system to the newly designed Standard Army Retail Supply System (SARSS). SARSS provides a distributed, survivable and fully integrated supply system from the direct support unit through theater level. It was designed to support independently deployed forces and eliminate large, batch-processing, van-mounted systems. A key feature of SARSS is its capability to provide divisionwide and corpswide asset visibility. Although a major effort, the acceptance testing for this system was interrupted for a more awesome task—assisting units deploying to Southwest Asia (SWA) in Operation Desert Shield.

CASCOM's and DCL's priority of effort since August has been to provide worldwide logistics automation support to Operation Desert Storm. Jointly, these activities have provided mobilization and operational assistance to Reserve Component (RC) and Active Component (AC) units. They have provided new systems fieldings, refresher training, systems operational support and communications assistance where and when necessary. CASCOM and DCL have also deployed a forward element to provide support, troubleshooting and system training to users in SWA and to advise CASCOM headquarters of the wants, needs and desires of Army units in the theater.

One of the first units CASCOM and DCL assisted was the XVIII Airborne Corps. The retail supply system conversion was far from complete.

However, this unprecedented conversion was irreversible. Most of the new hardware was in place. Units' supply files were being transferred. Pressing on was the only viable alternative. SARSS at the corps level would operate on the corps/theater automatic data processing (ADP) service center—version II (CTASC-II). The

[Interoperability] was further complicated by the fact that only Fort Bragg units had been converted to the new retail supply system.

Other deploying corps elements, . . . as well as III Corps and VII Corps units, were still operating on 1970-vintage equipment. The greater challenge was to ensure the integration and compatibility of the data being generated by the mix of automated systems.

CTASC-II is a much smaller tactical computer with much greater processing power than its predecessor. The 82d Airborne Division materiel management center (MMC) had been converted from the Direct Support Unit Standard Supply System (DS4) on the antiquated van-mounted computer system to SARSS on the Tactical Army CSS Computer System (TACCS).

The task was further complicated by the fact that only Fort Bragg units had been converted to the new retail supply system. Other deploying corps elements such as the 101st and 24th Divisions, as well as III Corps and VII Corps units, were still operating on 1970-vintage equipment. The greater challenge was to ensure the integration and compatibility of the data being

generated by the mix of automated systems. This was accomplished through hard work, long hours and innovative thinking on the part of

Functional and technical specialists provided predeployment assistance and remained on call throughout deployment. They ensured that users had the latest version of software, provided refresher training and fielded systems to units which had yet to receive automated systems.

CASCOM, DCL and XVIII Corps personnel. Figure 1 shows the data flow and communications required to support SWA requisition flows.

The corps logisticians were highly motivated and ready to support. However, their new system training was incomplete; they were still unfamiliar with the new hardware systems. When they deployed to SWA, the first of the CASCOM and DCL forward element departed with the

corps logisticians to complete the training and monitor the use of the new software/hardware systems.

The developers of other retail logistics systems also responded to the calls for automation assistance. Functional and technical specialists provided predeployment assistance and remained on call throughout deployment. They ensured that users had the latest version of software, provided refresher training and fielded systems to units which had yet to receive automated systems.

Supply systems personnel deployed to Europe, Fort Hood, Texas, and Baton Rouge, Louisiana, to work with corps and theater MMCs operating the Standard Army Intermediate Level Supply Subsystem (SAILS). They established interfaces between the recently implemented SARSS and the older supply systems. They provided refresher training to Reserve units and assisted units with file transfers as they prepared for deployment. Additionally, supply systems personnel are continuing to expeditiously field the unit-level logistics system to units throughout the world.

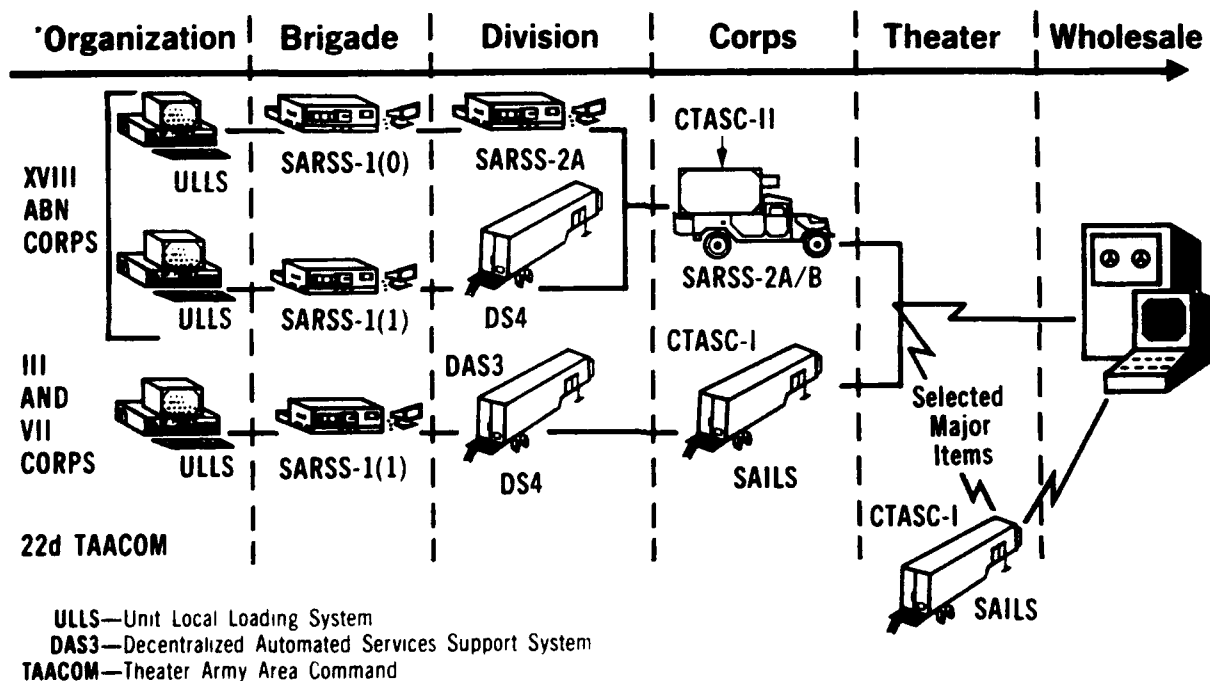


Figure 1. Current Requisition Flow

The Tactical Army CSS Computer System (*right*) and corps/theater ADP service center version-II (*below*).



Ammunition systems personnel provided standard Army ammunition system training, extension and operational assistance to theater- and corps-level MMCs. Additionally, they are providing training and functional assistance to conventional ammunition companies and battalions.

Transportation system personnel assisted corps-level air planners in using the Automated Air Load Planning System (AALPS). This automated planning capability reduced days of manual effort to hours of automated processing. Air load planning support centers were established at Fort Lee, Virginia, and Fayetteville, North Carolina, to provide continuous support to the deploying forces. CASCOM experts in

water port operations and documentation are providing assistance to the 7th Transportation Group units operating the Department of the Army Standard Port System-Enhanced (DASPS-E). The DASPS-E produces automated documentation support for water port operations.

Maintenance system and property accountability system personnel immediately responded to requirements to field the Standard Army Maintenance System and the Standard Property Book System to Reserve and National Guard units being called to active service. Support teams deployed throughout the Continental United States to quickly train and field these automated systems as units were activated.

Systems		Supply						Ammo			Maint		Trans	
		U L L S	S P B S R	S A R S S	S A R S S	D S 4	S A I L S	S A A S	S A A S	S A A S	S A M S	S A M S	D A S P S	A A S S
Units														
XVIII Abn Corps (2d MMC)	1st COSCOM	X	X		X			X	X		X	X		X
	82d Abn	X	X		X						X	X		X
	101st Abn	X	X	X		X				X	X	X		
	24th ID	X	X	X		X					X	X		
	197th Inf		X	X		X					X	X		
	12th Avn Bde	X	X	X										
VII Corps (800th MMC)	2d COSCOM	X	X	X		X	X	X	X		X	X		
	1st AD	X	X	X		X					X	X		
	2d AD Fwd	X	X	X		X					X	X		
	3d AD	X	X	X		X					X	X		
	2d ACR	X	X	X		X					X	X		
	1st ID		X	X		X					X	X		
	18th Engr Bde	X	X											
III Corps (4th MMC)	3d Bde/3ID	X	X	X										
	13th COSCOM		X	X		X	X	X	X		X	X		X
	2d AD	X	X	X		X					X	X		
	1st Cav	X	X	X		X					X	X		
22d TAACOM (321st MMC) EAC Units	3d ACR		X	X		X					X	X		
							X	X				X	X	
ULLS—Unit Local Loading System		EAC—Echelons Above Corps						DASPS-E—Department of the Army Standard Port System—Enhanced						
SPBSR—Standard Property Book System Revised		SAAS—Standard Army Ammunition System												
DAO—Division Ammunition Office		SAMS—Standard Army Maintenance System												

Figure 2. Operation Desert Storm

CASCOM and DCL support did not end with deployment. The sudden movement of units and equipment to a relatively immature theater required follow-up support to ensure that the automated systems functioned efficiently. The initial forward element was reinforced in October. The automated logistics assistance team has approximately 80 personnel supporting systems throughout the entire theater. Its mission is straightforward—ensure automated logistics systems adequately support our forward-deployed forces. Although straightforward, this is not an easy mission. None of the automated systems have ever experienced a wartime deployment of this magnitude. Most have traditionally operated in a peacetime, garrison environment. The deployment of these systems covers the width and breadth of *Desert Storm* from company through theater level. Figure 2 provides a matrix that displays the complexity and magnitude of the systems' deployment effort.

Automated operations began with an austere communications environment and with

electrical power supplied primarily by generators. Due to the massive movement of personnel and materiel to SWA, the volume of requisitions exceeded previously experienced or anticipated rates. Lack of an adequate in-theater communications capability and the volume of requisitions increased order and ship time, requisition processing time and user frustration. These issues needed immediate attention.

The theater-level communication environment has been enhanced with a direct Defense Data Network (DDN) link and with improved automatic digital network (AUTODIN) capabilities. Communications below corps level are still deficient but, through priority efforts, are also being improved. The requisition overload impacted all systems, but DS4 and SARSS were hit the hardest. Moving the CTASC-II from Fort Bragg to SWA was a major step in the right direction. CASCOM devised a means to optimize the SARSS requisition processing and fielded the optimization in January 1991. This action provided additional proc-

essing time for other backlogged system requirements. Other processing timesavers were added in the January–February 1991 time frame.

Most notable were the decisions to split the 24th Infantry Division's DS4 data bases, to process on multiple hardware platforms and to provide a third CTASC-II processor board. Hardware upgrades are also being pursued to provide a larger commercial version of the TACCS, which has reached maximum processing capacity, and to purchase larger disk drives for the aging van-mounted systems.

Reliable tactical logistics automation is an integral element of today's dynamic battlefield. It proved to be a critical element in the dramatic buildup of forces and supplies that allowed for the successful execution of Operation Desert Storm. CASCOM and DCL remain committed to ensuring the reliability of logistics automation in support of the deployed

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force as the Army begins an equally massive redeployment effort. **MR**

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Building the Desert Logistics Force

Major James E. Myers, US Army

AT THE commencement of Operation Desert Storm on 16 January 1991, the US theater Army contingent of the allied coalition in the Persian Gulf consisted of 7 2/3 divisions, structured under two corps and a myriad of corps- and theater-level combat support and combat service support organizations. This translates into an Army theater population of more than 250,000 uniformed men and women.

Building the logistics force structure to support the reception and follow-on sustainment missions for a force this size, deployed halfway around the world, is a significant planning and programming challenge. In August 1990, the Department of the Army, deputy chief of staff for logistics (DA DCSLOG), requested the US Army Combined Arms Support Command (CASCOM) to coordinate with analy-

The most arduous step in building a logistics force is identifying the total logistics work load in a theater of operations. The Army analysis community has, in its arsenal, a tool specifically designed for this task—the . . . (FASTALS) model.

sis activities at the Logistics Evaluation Agency (LEA) and Concepts Analysis Agency (CAA). They were to conduct a series of logistics force structure assessments (LFSAs) to assist the DA DCSLOG staff and the Army in meeting this challenge.

The most arduous step in building a logistics

force is identifying the total logistics work load in a theater of operations. The Army analysis community has, in its arsenal, a tool specifically designed for this task—the force analysis simulation of theater administrative and logistics support (FASTALS) model. This model is most

The CAA produced the first Persian Gulf theater of operations FASTALS model in late August. This analysis established the formal benchmark for all future Desert Shield logistics force programming. Through continuing coordination with the DA staff and CASCOM, this model was refined and updated throughout the force planning effort.

commonly recognized throughout the Army community for its role in the total Army analysis process. Given the input of a combat force, a wargighting scenario, the modeled parameters of a theater's logistics capabilities, logistics policies and a master file of candidate units, FASTALS computes logistics work loads, allocates organizations and produces a doctrinally balanced, time-phased, geographically distributed theater force list. This force list identifies the optimum doctrinal logistics force structure required to support the scenario. FASTALS not only recognizes sustainment of the total theater force but also identifies the logistics force structure requirements for receiving forces into the theater of operations.

Using an existing resident FASTALS model, CASCOM opened liaison with 1st Corps Support Command (COSCOM) and US Army Forces Command (FORSCOM) force planners to assist in the early logistics force planning effort. The results of this initial analysis of theater logistics requirements contributed to the development of the first programmed *Desert Shield* logistics force. The CAA produced the first Persian Gulf theater of operations FASTALS model

in late August. This analysis established the formal benchmark for all future *Desert Shield* logistics force programming. Through continuing coordination with the DA staff and CASCOM, this model was refined and updated throughout the force planning effort.

The key to the FASTALS modeling effort is inputting the data and theater parameters that best emulate the scenario a force planner is addressing. If any of the input is changed, the theater force structure is affected. This is where the LFSA made significant contributions to the force planning and programming effort. Given changes or proposed changes in any part of the theater force mix, the LFSA provided DA-level planners with a detailed assessment of the impacts these changes would have on theater logistics force structure requirements and the latest programmed theater logistics force.

The cornerstone of the LFSA, FASTALS' unique capability to rapidly compute and accumulate logistics work loads against discrete types of units makes it sensitive to changes in theater force composition. Using the doctrinal theater force structure generated in FASTALS as a baseline, the Force Structure Division of CASCOM's Force Development and Evaluation Directorate conducted seven separate assessments to evaluate impacts of different *Desert Shield* planning force alternatives on the theater logistics force structure.

Each of these assessments captured proposed theater force mix variations not modeled in the

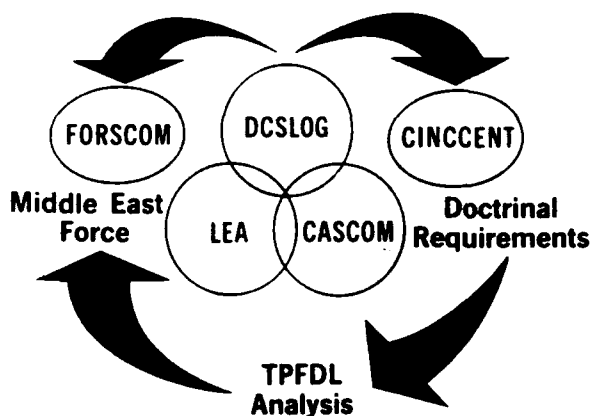
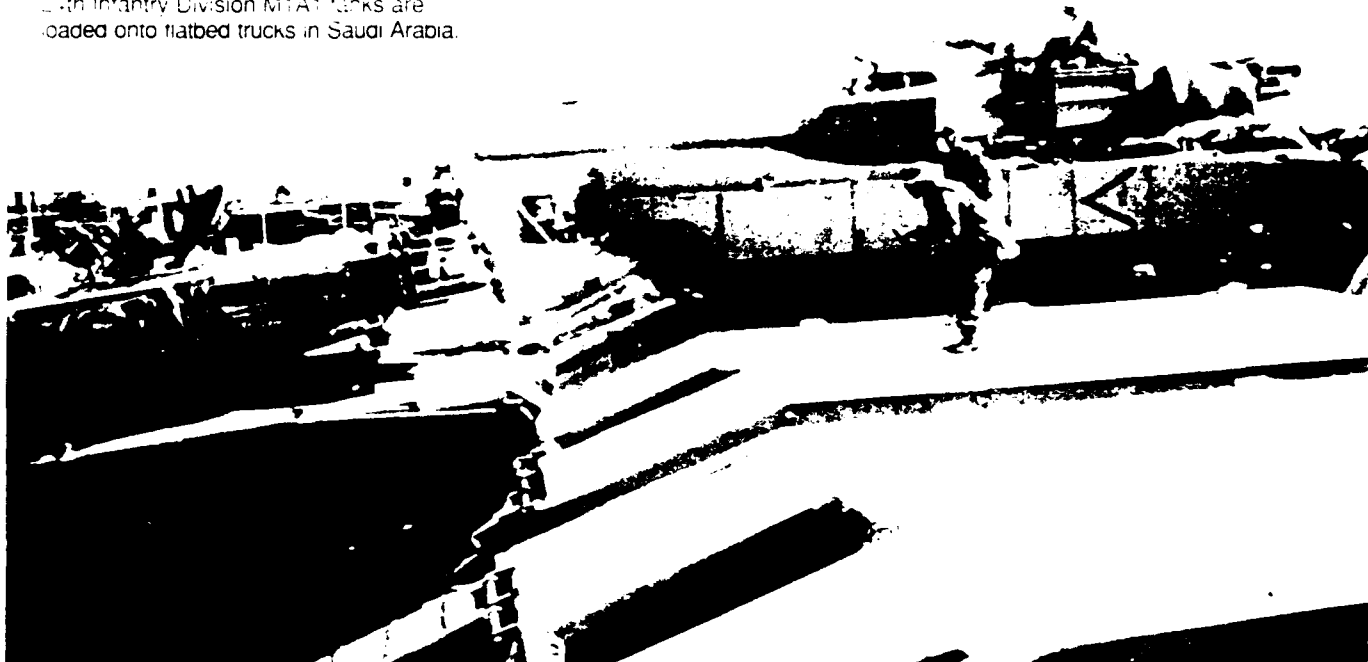


Figure 1. LFSA *Desert Shield/Storm*



The doctrinal allocation of heavy truck companies used in the baseline analysis was one company for every two heavy divisions. For Operation Desert Shield, the commander in chief identified the need for a much greater heavy lift capability. Coordinating through the DA DCSLOG staff, the allocation of heavy truck companies was raised to one per heavy brigade.

initial FASTALS analyses. For example, the doctrinal allocation of heavy truck companies used in the baseline analysis was one company for every two heavy divisions. For Operation Desert Shield, the commander in chief (CINC) identified the need for a much greater heavy lift capability. Coordinating through the DA DCSLOG staff, the allocation of heavy truck companies was raised to one per heavy brigade. Inputting this new allocation parameter into the FASTALS model generated new heavy truck company density for the theater. At the same time, it identified all other changes in theater logistics force structure based upon the increased work load to receive and sustain this new heavy truck force structure.

In another example, the total theater logistics force structure was reduced because doctrinal allocations for selected corps- and theater-level combat support units (engineer, signal, military police, and so on) were not planned for deployment to the theater of operations. Constraining the numbers of these types of units in the FASTALS model reduced the logistics work load in the theater, thus reducing logistics force struc-

ture requirements. Each force mix evaluation produced a new theater logistics force listing. By comparing these new force listings against the FASTALS baseline or against each other, CASCOM rapidly identified the total logistics force structure implications associated with any combination of proposed theater force changes.

In the final step of the LFSA process, the LEA developed an analytical tool to compare theater logistics force requirements identified through the LFSA against the logistics force capability identified on the time-phased force development list (TPFDL). Because the logistics forces identified on the TPFDL reflected organizations at varying levels of modernization and capability, a simple unit-to-unit comparison would not provide a valid assessment. To solve this problem, logistics forces on the TPFDL were redefined and grouped in terms of their logistics work load capabilities. These capabilities were then compared to DA-identified critical logistics work loads generated by FASTALS excursions in the LFSA. Through this comparative analysis process, the TPFDL logistics force was rated green, amber or red, based upon its total

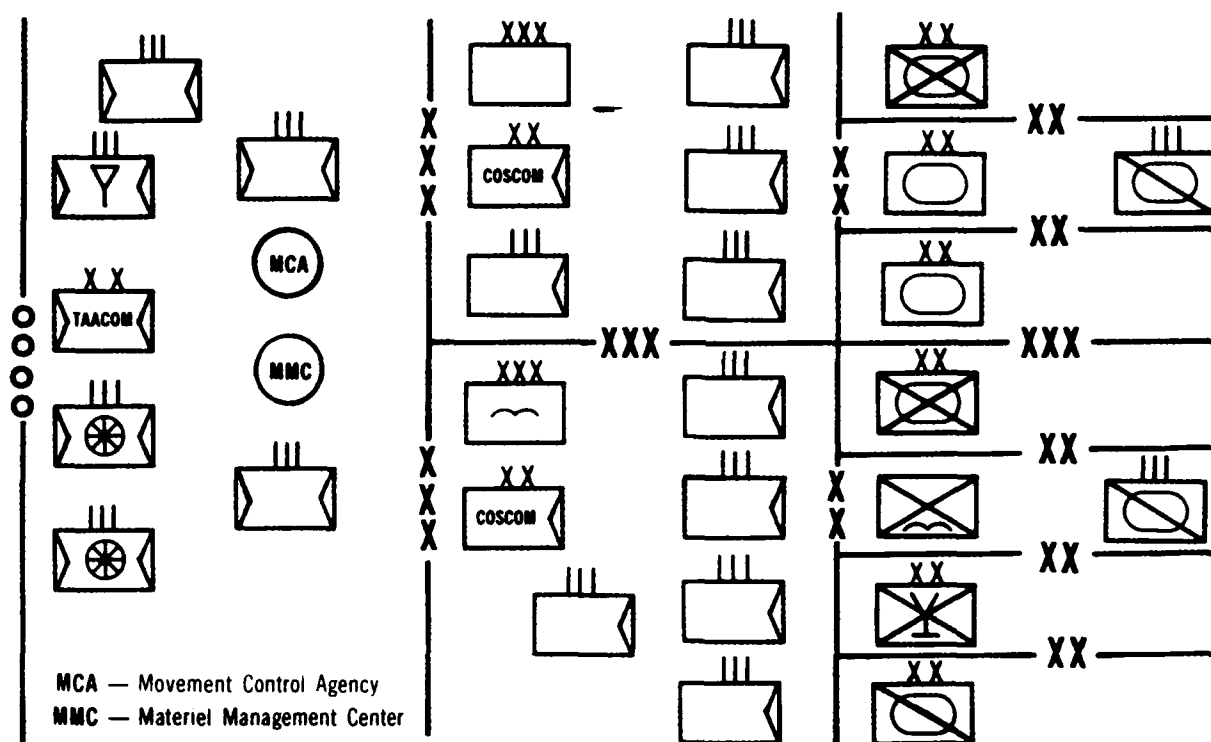


Figure 2. Desert Shield Logistics Support

The key to the FASTALS modeling effort is inputting the data and theater parameters that best emulate the scenario a force planner is addressing. If any of the input is changed, the theater force structure is affected. . . . The LFSA provided DA-level planners with a detailed assessment of the impacts [any] changes would have on theater logistics force structure requirements.

capability to meet theater logistics requirements.

As proposed changes associated with a given LFSA were implemented, the baseline for FASTALS analysis in subsequent FSAs was adjusted. When the force planning effort shifted to building the combat force mix to support transition from Operation Desert Shield to Operation Desert Storm, a new Persian Gulf theater FASTALS model was incorporated into the LFSA

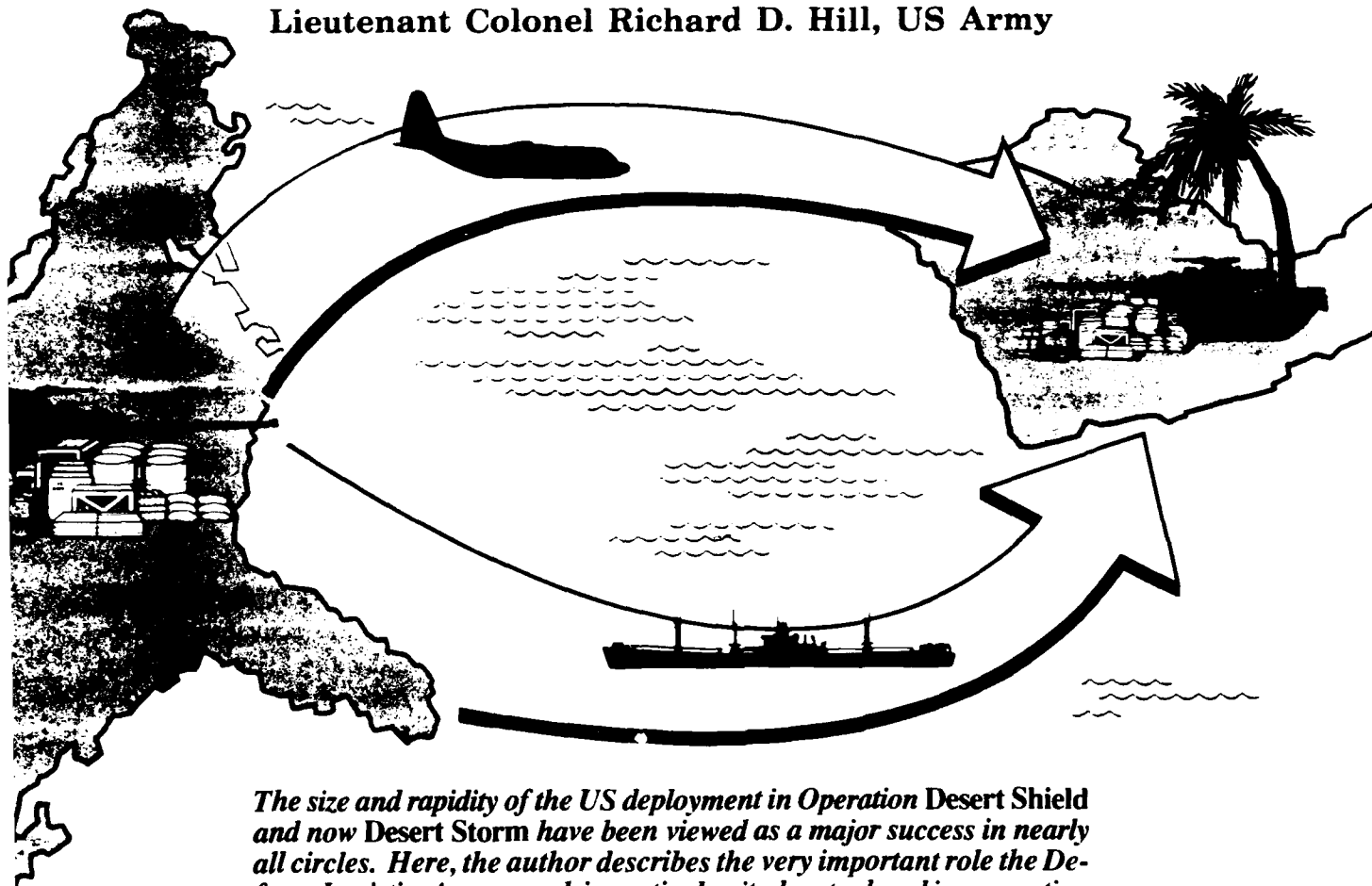
process. The average turnaround time for each LFSA was about 24 hours. This provided the DA DCSLOG staff with a timely, analytically supported, comprehensive assessment of evolving theater logistics force structure issues to consider in the force planning and programming effort.

The significance of the value added by the LFSA process in building the desert logistics force can best be expressed by the logistics force structure in the theater today. As of 4 January 1991, the Persian Gulf US Army theater logistics force consisted of nine corps support groups, three area support groups, two transportation groups and a petroleum group structured under two COSCOMs and a theater Army support command. A comparison of this theater logistics force structure against LFSA-generated doctrinal theater logistics requirements indicated an 83-percent match. Using host nation and contractor support in the theater of operations, the desert logistics force was able to meet the Operation Desert Storm challenge. **MR**

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Depot Operations Supporting **DESERT SHIELD**

Lieutenant Colonel Richard D. Hill, US Army



The size and rapidity of the US deployment in Operation Desert Shield and now Desert Storm have been viewed as a major success in nearly all circles. Here, the author describes the very important role the Defense Logistics Agency and, in particular, its depots played in supporting both unit deployment and the required logistics support.

The Tactics—no, amateurs discuss tactics, Alekseyev thought wryly. Professional soldiers study logistics.
Red Storm Rising, Tom Clancy

IN THE best-selling novel, *Red Storm Rising*, the fictional Soviet general quoted above puts the importance of logistics into perspective. It is a multifaceted issue that the amateur does not easily understand or appreciate. Logistics covers a wide range of issues from production to

storage and from wholesale issue to final delivery to the soldier. This article looks at the complexity from one defense logistics depot's viewpoint.

When US forces were ordered to deploy to the Persian Gulf in August 1990, the challenges presented to logisticians were like nothing experienced since World War II. The size of the force deployed in such a short time exceeds the deployment requirements of Korea and Vietnam. The length of the logistics pipeline was more

than 8,500 nautical miles, or a 17-hour roundabout flight from North America through Europe and then on to the Middle East.

The Defense Depot, Richmond, Virginia (DDRV), one of six Defense Logistics Agency (DLA) depots, was at the forefront of the early

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surge of logistics support for Operation Desert Shield. In the earliest phase, the primary effort was to move those units deploying from their bases. Only the 82d Airborne Division had deployed some of its units, as well as selected Tactical Air Command squadrons (that needed immediate forward support), but moving supplies to these units also began at once.

DDRV was faced with a myriad of challenges in the early days. The mobilization came at a time when the depot's budget was stretched thin to cover expenses for the remaining months of fiscal year 1990. The depot was also functioning under a yearlong hiring freeze; most personnel were working single shifts. The need for immediate overtime, regardless of budget constraints, was evident. Defense depots are almost exclusively staffed by civilian personnel, and the dedication of the work force can never be overstated. Clerks, program analysts, secretaries and other administrative personnel worked as stock selectors, packers or laborers. Working around the clock, seven days a week, the depot rose to the challenge of getting the units moving.

Another civilian force, the civilian transportation industry, played a key role in the deployment effort. Defense depots depend almost exclusively on commercial carriers for transpor-

tation. The civilian carriers were totally supportive and took actions that were far beyond what is normally expected. One local trucking firm pulled assets from its civilian customers and risked heavy fines by allowing drivers to exceed hours and day limitations. That company's chief of operations slept in his office for two weeks to be available to support the depot's needs.

Even with this herculean effort, repeated throughout the whole industry, the nationwide shortage of transportation equipment and drivers began to strain the system. Rapidly off-loading trucks at their destinations ensured empty trailers were returned to the effort, but the sheer numbers of trucks frequently overwhelmed the receiving bases. For example, the first 10 days, the Naval Supply Center, Norfolk, Virginia, requisitioned almost 5 million pounds of subsistence for deploying ships from DDRV alone. More than 120 trucks off-loaded at this one location from one depot!

Likewise, air assets were strained during this time. Commercial air cargo carriers such as Airborne Express, Federal Express and others were called upon to meet an unparalleled surge. For the first time since its inception, the Civil Reserve Air Fleet (CRAF) was activated, and selected aircraft and crews moved deploying units to Saudi Arabia. A network news clip demonstrated this joint effort when it panned a Saudi airport and showed a Federal Express and Burlington Air Express jet among C-5s and C-141s. This also highlighted the fact that airframes are very limited.

Units, anxious to get needed equipment and supplies, generally requested airlift for their requisitions to the point of absurdity. For example, one unit requested the depot to fly 168,000 pounds of meals ready-to-eat (MREs); another requested airlift of 15,000 pounds of insect repellent. Many units failed to realize that not only is airlift a scarce asset, but it is also unbelievably expensive. DDRV and the other depots established priorities and selected alternative modes that generally met the deployment schedules.

Deploying units continued on into 1991 as National Guard and Reserve units were acti-

Defense Depot, Richmond seldom loaded seavans such as this Sea-Land container, but after *Desert Shield* began, hundreds were shipped monthly to Saudi Arabia's "Iso City" at Al Jubail.



Sea-Land

Defense depots depend almost exclusively on commercial carriers for transportation. The civilian carriers were totally supportive and took actions that were far beyond what is normally expected. One local trucking firm pulled assets from its civilian customers and risked heavy fines by allowing drivers to exceed hours and day limitations. That company's chief of operations slept in his office for two weeks to be available to support the depot's needs.

vated and deployed to the region. Active units deployed from Europe to bolster those forces already on station in the area.

Along with deployment support, resupply began almost immediately, and this proved equally challenging to the depot. The sheer size of the task must be put into perspective. In less than six months, the population of a major city the size of Louisville, Kentucky, was moved 8,500 miles, accompanied by tens of thousands of vehicles of all varieties. This population had to be fed, housed, clothed, protected and entertained. The Saudi government was supplying soft drinks, fresh fruit and potable water which was a tremendous help. But 400,000 personnel eat three meals a day, seven days a week, amounting to 1,200,000 meals per day, or 8.4 million meals per week.

The desert environment is hard on man and machines as the fine sand and high temperatures quickly proved. The demand for air filters for vehicles and aircraft surpassed all expectations as did the need for more frequent maintenance. Orders for oil filters and the variety of lubricants required to maintain a mechanized force of this type also exceeded the expected demand. One

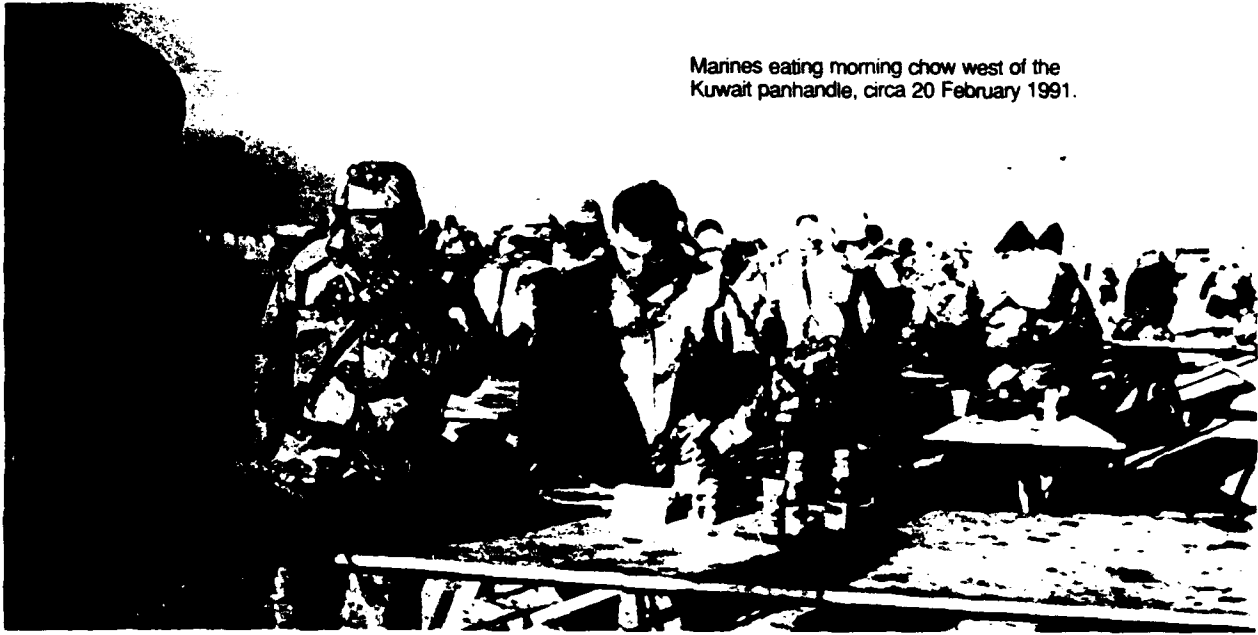
newspaper account quoted Army officials:

"The harsh environment and accelerated training pace is wearing out most parts far more quickly than normal. For example, most filters fail eight times faster; tires, five times. In general, the Army, based on past testing in desert conditions, has been buying parts 3 1/2 times its normal rate for systems deployed in the region and it's proven to be pretty accurate."

Also, high temperatures rapidly drain batteries and blow electric circuits. Hoses and pumps have an equally limited life in this environment. Resupplying these less glamorous items, which make up a large part of DDRV's inventory, is essential and has resulted in frequent emergency shipment requests from Richmond and other depots. As cooler weather arrived in the desert, there were other demands such as long underwear, sleeping bags, field jackets and night desert camouflage coats.

The demand for air shipment direct to Saudi Arabia grew as more units arrived in the theater. Aerial ports of embarkation (APOEs) such as Dover Air Force Base (AFB), Delaware, and McGuire AFB, New Jersey, soon approached

Marines eating morning chow west of the Kuwait panhandle, circa 20 February 1991.



The population of a major city the size of Louisville, Kentucky, was moved 8,500 miles, accompanied by tens of thousands of vehicles of all varieties. This population had to be fed, housed, clothed, protected and entertained. The Saudi government . . . was a tremendous help [b]ut 400,000 personnel eat three meals a day, seven days a week, amounting to 1,200,000 meals per day, or 8.4 million meals per week.

gridlock. Each service operates an airlift clearance authority (ACA) to control its respective service's allocations of theaterbound military airlift. Depot transportation personnel obtained permission to forward shipments to the proper APOE. Because of the overwhelming volume of air-eligible shipments, each service established set criteria to expedite the decision process. This criteria automatically downgraded large numbers of these shipments to surface (sealift) mode.

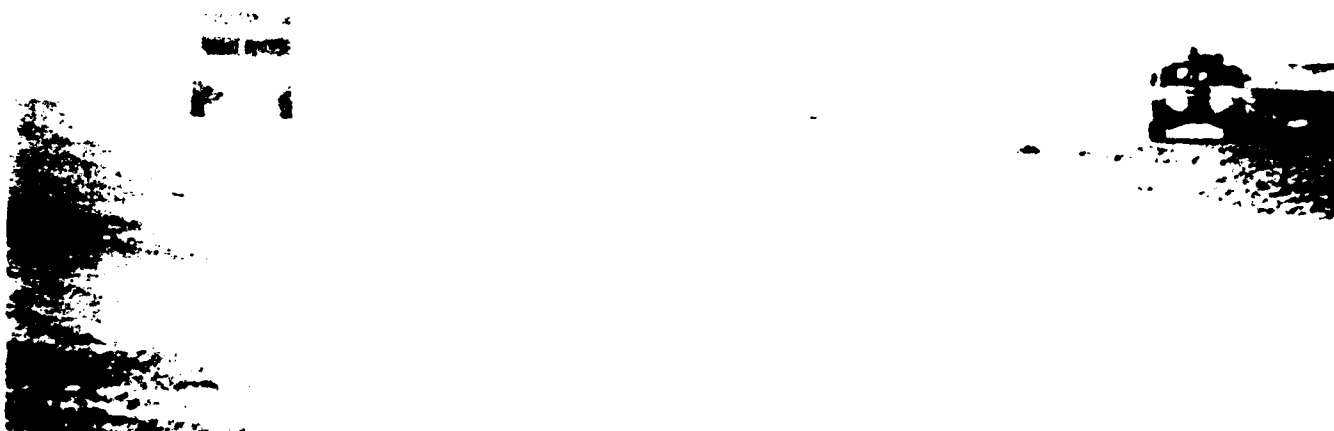
By October, the situation, while somewhat improved, still found the APOEs overwhelmed with more tonnage than they possibly could move quickly on the available aircraft. Critical repair parts still were not getting shipped quickly enough. A program called Desert Express was initiated to bypass the regular APOE backlogs. Charleston AFB, South Carolina, was selected as the APOE, and each service was allocated space for "highest priority, not-mission-capable supply (NMCS)" items. Desert Express freight was restricted to repair parts and medical items only. For example, the Army was allocated five pallet positions (15,000 pounds or 2,500 cubic feet) for each daily flight. A special project code was designated for Desert Express to ensure visi-

bility of these special shipments.

The loaded aircraft departed on time regardless of circumstances, and depots were required to have the material at Charleston not later than 1030 each morning. Again, the ACA approved all Desert Express shipments before sending them to the APOE. Some days there was more Desert Express freight than could be moved. One of the problems appeared to be the lack of a clear definition of what was high priority, NMCS. On 11 January, for example, shipments arriving at Charleston included one pallet of duplicating paper, six pallets of truck tires, one pallet of sandbags, and so forth. A depot does not decide what is NMCS. For the most part, however, this supplement to normal airlift has worked extremely well.

The Mail

In discussing airlift capability and demand for its use, a *Desert Shield* phenomena developed immediately after deployment began—mail to the troops. The public outpouring of support for our forces was unlike anything in recent memory. Schoolchildren, veterans' groups and ordinary citizens were writing letters and sending care



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packages, tapes and magazines that were shipped by military aircraft through these same APOEs. Postal authorities reported that more than 30 million pounds of mail were shipped from the beginning of *Desert Shield* until Christmas. On 30 November, 617,000 pounds of mail were airlifted! Assigning priorities became a more difficult task. Which should receive priority—the morale-building letter from home or the repair part for a nonoperational tank?

DDRV routinely uses Express Mail to ship thousands of small parcels to the theater each day as well. The Desert Express route solved much of this dilemma, but the logistics of moving hundreds of thousands of pounds of mail remains a major challenge! (Note: On 19 January, the Department of Defense [DOD] asked that packages not be sent to deployed forces, just letters.)

Sealift

Of course, when all available air assets are committed or using air is not practical, sealift is the only recourse. General Hansford T. Johnson, commander in chief of the US Transportation Command, Scott AFB, Illinois, in his keynote address to the National Defense Trans-

portation Association in October, cited the sealift dilemma:

"In Korea and Vietnam, sealift accounted for 95 percent of all dry cargo and 99 percent of all petroleum products shipped. We expect similar figures for *Desert Shield*."

However, since World War II, the US Merchant Marine has diminished at an alarming rate, both in vessels and in trained crews. Recently cited figures highlight this loss. The US Merchant Marine fleet went from 5,000 ships in 1945, to 893 ships in 1970, to 424 ships in 1989. Seagoing jobs also dropped from 100,000 to 28,000 during this period.

Johnson stated that we had activated our eight fast sealift ships and 36 of the 96 Maritime Administration reserve vessels by 21 September. Retired crewmen manned some of these vessels in many cases because today's modern ships are a drastic change from the World War II vintage ship in the reserve fleet. Today's seaman just is not knowledgeable of the old equipment.

These vessels' condition when activated was another problem. Even with the Maritime Administration's best of efforts, maintaining a ship not used for decades cannot ensure

seaworthiness. Considerable work was required on the vessels, and operational problems still restricted their overall effectiveness. So the balance of the sealift capacity must come from the civilian sector. The loss of US flag vessels cited by Johnson means that many of the civil sector's

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vessels must come from other countries. This serious situation has been addressed frequently in recent years; however, congressional action has only allowed the purchase of a limited number of vessels. These vessels include the eight fast sealift ships and those ships in maritime prepositioning fleets (that were preloaded with equipment in Diego Garcia and moved early on to the Persian Gulf).

It can be argued that modern container vessels carry more on each voyage than five of the victory ships of World War II fame. However, this too offers unique logistic challenges in discharging the larger vessels and finding room to stage the containers before moving them onto the ultimate user. A standard container vessel can hold about 2,100 40-foot containers. Containers and ships are limited assets as well, and competition for their use is fierce. The Military Traffic Management Command is the central allocator of sealift resources, and depots such as DDRV must request ship space (much the same as the ACA does for airlift). Each service operates consolidation and containerization points (CCP) to ensure maximum use of containers going into the theater.

New Cumberland Army Depot, Pennsylvania, for example, is the Army's East Coast CCP.

Depots forward multiple consignee shipments bound for Saudi Arabia to the service CCP where it marries up with other shipments, and the single consignee gets a full container load of supplies to deliver directly to the unit. If the depots have enough freight going to one destination, the container is filled without going to the CCP.

Before August 1990, DDRV rarely shipped containers. With *Desert Shield*, container shipments became commonplace, with 379 shipped in the last three months of 1990. For example, DDRV's part of Christmas dinner—canned food and dried food such as sugar, flour and cookie mix—required 38 containers. One shipment of special food for hospitals used another 130 containers. One of the most unusual shipments sent from Richmond was two container loads of Internal Revenue Service tax forms and booklets. Along with requisitioned supplies, depots are forwarding books, tapes, games and care packages by adding them to containers when space is available. In January, Maple Sugar Products in Quebec, Canada, donated 200 cases of pure maple syrup that were added to shipments going to hospitals.

As previously mentioned, distributing supplies once they reach the theater is a major logistics challenge. The road network in the region was never designed to handle this volume of traffic, and rail lines are almost nonexistent. Trevor N. Depuy, in the 14 January *Army Times*, calls this in-country distribution effort "the most challenging task." Further, he states:

"The main reason that distribution is such a problem in the gulf is that the dense infrastructure of roads, railways, airfields, ports, buildings and other structures do not, by and large, exist among the Gulf states. In large part because their populations are fairly small in relation to [the] land area they cover, these countries have not developed many of these things."

Supporting a force the size of that deployed to the region requires tremendous combat service support assets. Seventy percent of those assets is in the National Guard and Reserve portions of the Total Army, accounting for the



More than 40,000 lbs. of freshly delivered mail on the carrier USS John F. Kennedy's hangar deck.

The public outpouring of support for our forces was unlike anything in recent memory. Schoolchildren, veterans' groups and ordinary citizens were writing letters and sending care packages, tapes and magazines. . . . Postal authorities reported that more than 30 million pounds of mail were shipped from the beginning of Desert Shield until Christmas.

large number of logistic units activated.

The 14 January 1991 *US News & World Report*, stated:

"While it has always been true that an army travels on its belly, in the desert, logistics is life itself. The US Army's desert warfare manual calls the desert 'a tactician's dream, but a logistician's nightmare.'

"To win battles, units must be able to maneuver freely; but in the desert, they can't stray too far from fuel and water sources. The US Army estimates that one division of 350 M1 tanks will consume more than 600,000 gallons of fuel a day, nearly twice the consumption of General [George S.] Patton's entire 3rd Army in its 1944 drive across France. Moreover, military experts note, the desert moon turns night into day, and combat can go round-the-clock, placing an even greater strain on logistics."

Forward logistics support to units in combat will be more difficult with the lack of infrastruc-

ture cited by Depuy. Moving supplies by truck in such an environment will be difficult at best and could surely slow down the mechanized battle. From the depots, this was reflected in an ever-increasing demand for consumable supplies as combat units built their stockage levels in the days leading up to the 15 January United Nations (UN) deadline.

It is important to note that as the supplies and equipment move to the Persian Gulf, the depot also receives new supplies from vendors and manufacturers at an almost equal pace. In December 1990, DDRV shipped out more than 25 million pounds of freight while receiving over 22 million pounds of like material.

There have been shortages of items such as desert camouflage uniforms and MREs at the depot on several occasions but not for very long. While there is no substitution for desert uniforms, DOD has contracted for some alternative items. For example, Hormel's Top Shelf

[There were] shortages of items such as desert camouflage uniforms and MREs at the depot on several occasions but not for very long. While there is no substitution for desert uniforms, DOD has contracted for some alternative items. For example, Hormel's Top Shelf pre-packaged meals were issued until MRE stocks could be replenished.

prepackaged meals were issued until MRE stocks could be replenished. Vendor-manufactured tray pack rations were also occasionally in short supply. DLA tasked Defense Depot, Memphis, Tennessee (DDMT), to create substitutes in-house. The depot established an assembly line

to manufacture the tray packs from existing stocks of regular B-rations. Each tray served 12 to 36 soldiers, depending on the food item. DDMT then assembled complete lunch and dinner meals to feed 200 service members per pallet. The effort was so successful that the depot was able to hire 300 people and add extra 24-hour production lines. Production rates went from 450 pallets a day to 2,500 pallets a day.

The defense supply centers are DLA's inventory management and buying arms. As shortages are recognized, these supply centers purchase additional supplies. For common items such as lubricants, subsistence or sunscreen, this is generally not a problem. Motor oil (10W30) may well now have a Chevron label in lieu of the standard olive drab can, but the product and the source remain the same. For other items that are generally exclusively used for the

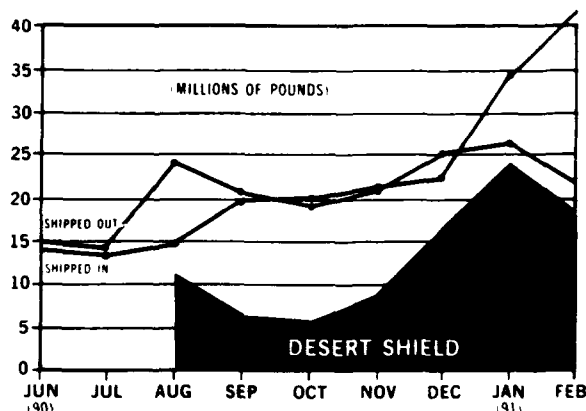


(Top) Warehouse and office personnel working on the line to eliminate backlogs. (Above) Sorting and shipping the acres of different petroleum products to meet user needs was a major logistical challenge.

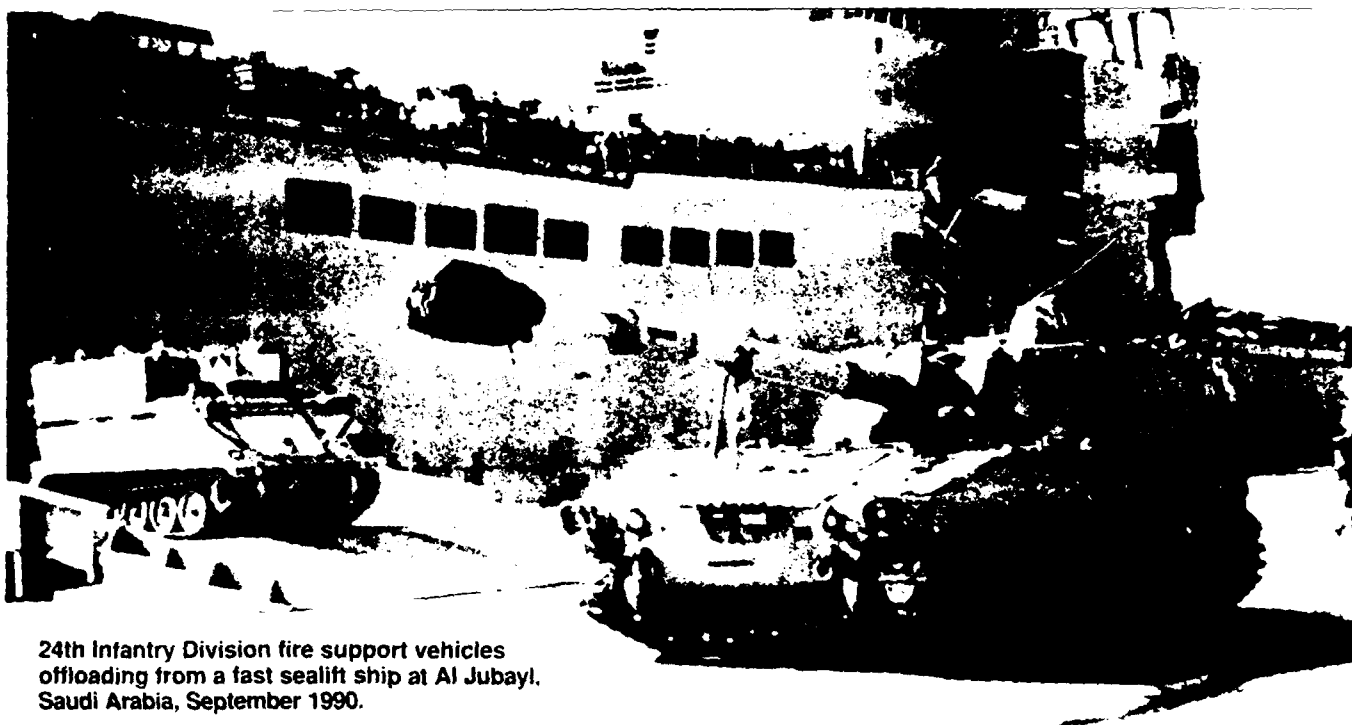
DDRV is one of five DLA depots providing worldwide support to US military forces. The depot stores more than 700,000 NSNs in more than 850,000 locations valued at more than \$1 billion. It stores items for all six DLA supply centers and individual service-managed items.

The depot includes more than 5 million square feet of covered storage and 2.5 million square feet of open storage. DDRV stores photographic supplies, batteries, kitchen equipment, packaged petroleum, clothing, tentage, subsistence and construction materials. The depot is authorized five military and 1,200 civilian personnel.

TRANSPORTATION WORK LOAD



Total freight shipped for *Desert Shield/Storm* from Defense Depot, Richmond, Virginia was 91.7 million pounds at a cost of \$2,394,261.00.



24th Infantry Division fire support vehicles offloading from a fast sealift ship at Al Jubayl, Saudi Arabia, September 1990.

Eight fast sealift ships and 36 of the 96 Maritime Administration reserve vessels [were activated] by 21 September. Retired crewmen manned some of these vessels . . . because today's modern ships are a drastic change from the World War II vintage ship in the reserve fleet. Today's seaman just is not knowledgeable of the old equipment. These vessels' condition when activated was another problem.

military, the problem is not so simply solved.

Depuy, in his *Army Times* article, addressed this issue:

"There is one major area for concern in this sector. Modern sophisticated weapons such as laser-guided antitank missiles (like the Hellfire or U.S. AH-64 Apache attack helicopters) and sophisticated antiaircraft missiles, are not produced in real quantity. Increasing production rates would prove difficult. Production lines are limited for major components like complex electronics; skilled workers who assemble components and weapons to assemble components cannot be trained easily; and some of these components and weapons require special materials or ingredients for which supplies are limited.

"This twin problem, of limited initial stocks and low production rates, means that it is possible for U.S. and allied forces to run out of certain items. In the event of a long Gulf war (one that lasts, say, for over 60 days), and even with restrictions in effect, it is unlikely that production could begin to meet demand and permit restoration of stocks, until the war was over."

A report from the Associated Press, on 14 January 1991, stated:

"More than \$1 billion has been spent on food, clothing and medical supplies for Operation Desert Shield. It is difficult, however, to put a figure on ammunition, parts and other hardware, although it is at least in the hundreds of millions of dollars.

"Many of these contracts have been handshake deals with some suppliers, a conscious decision to violate contracting procedures and federal law to support the needs of the deployed forces. The number and value of these deals won't be known until the arguments are formalized.

"For example, the Army is buying hundreds of powerful engines needed for heavy equipment haulers from Roger Penske, a former race driver who owns an automotive business. No formal contract exists. . . . [Major General Charles Murray said.] He was the savior of our fleet over there. Penske immediately shut off all civilian buyers for the engine and turned his entire production line over to us, several hundred engines



Well-protected pallets of *Desert Shield* supplies are readied for shipment at Pope Air Force Base's Yellow Ramp, 21 August 1990.

One of the first lessons learned, passed along from the desert, is that the fine sand of the Saudi desert can get into repair parts and supplies unless the packing level is the equivalent of waterproofing! This additional protective packaging uses more supplies at a correspondingly higher cost. It also requires additional time to pack at this level which reduces depot production rates.

very quickly. He did it on a handshake."

It was also stated that most recent contracts are not designated specifically for Persian Gulf deployment. Rather, they will refill stocks emptied to supply the Middle East force.

On 9 January 1991, President George Bush issued an executive order compelling civilian manufacturers to give first priority to the military as Penske had already done. Under this authority, up to a million Reservists could also be called up if needed. A call-up of this magnitude would be weighed against the limitations (cited by Depuy) of skilled workers who may well be susceptible to this activation.

For the DLA depots, this was a factor early on. Civil servants, while often maligned by those not familiar with the system, are truly dedicated patriots. Many are veterans, many are military retirees and a larger number belong to National Guard and Reserve units that have already been activated and deployed. The DLA-wide hiring freeze has technically never been lifted, and exceptions are made on a case-by-case basis. Hiring a worker off the street helps, but the time re-

quired to train replacements to a fully productive level takes time. Civilian industry competes with the government for the same personnel. In the Richmond area, with an unemployment rate of less than 4 percent, the competition is fierce, and the vacancies have not yet been filled.

Budget Considerations

Budget constraints remain a factor today. DOD has not been given a blank check, even in *Desert Shield* and *Desert Storm*. As mentioned before, overtime was initiated at once. From 7 August to 1 January, DDRV spent \$1,103,574 in overtime. This compares to \$977,715 spent in all of the rest of 1990. Packing requirements have almost doubled for *Desert Shield*. One of the first lessons learned, passed along from the desert, is that the fine sand of the Saudi desert can get into repair parts and supplies unless the packing level is the equivalent of waterproofing! This additional protective packaging uses more supplies at a correspondingly higher cost. It also requires additional time to pack at this level which reduces depot production rates.

In examining the increased protective packing requirements and the resultant additional costs to DDRV, we calculated that an additional \$66,805 per month in supplies was needed for packing alone. Additional equipment was purchased to perform the packing functions, amounting to another \$25,000. The increased amount of shipping, which may not include special packing but requires some level of packing, has increased overall depot costs as well.

The need to get supplies to soldiers in the field was, and always will be, the overriding concern for a depot. But budgets always count, and logisticians must include budgetary factors in their calculations as they consider the best way to provide support with available resources.

One example of the influence of budgetary considerations in *Desert Shield* has been contracting for the commercial carriers mentioned earlier. DLA has operated under guaranteed traffic agreements with commercial carriers for several years. These arrangements offer many benefits, one of which is transportation at the lowest possible cost. In a nutshell, a guaranteed traffic agreement ensures that a specific carrier will transport all freight of a given type to a given region. In the case of *Desert Shield*, however, the surge requirements far outpaced the capabilities of individual truck companies.

Other carriers may be used in emergency situations, but the costs must be carefully weighed. For example, under a guaranteed traffic agreement, the basic rate for moving a 40,000-pound load from Richmond to Fort Hood, Texas, is approximately \$800. When DDRV looked at alternatives for *Desert Shield*, it examined six potential carriers to find their charges ranged from \$1,000 to \$4,000 per truckload. To determine the best option for shipping a truckload of equipment, freight planners examined all possible factors such as service and equipment availability, as well as cost.

The planners asked a series of questions: Can the carrier holding the guaranteed traffic agreement make the move in the required time? If the answer is no, which other carriers can do the job? Of the carriers that can do the job, what are the

Munitions specialists prepare to load a laser-guided Maverick missile onto an A-10 "Warthog" during the early stages of Operation *Desert Storm*, February 1991.



***Sophisticated weapons . . .
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Production lines are limited for major
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comparative costs? DLA depots often bite the bullet in such situations and spend the money to get the required service.

From 7 August through the end of December, DDRV moved more than 25,000 tons of *Desert Shield* freight for only \$1.4 million. This does not include shipment of containers since this is funded outside the depot's budget, but it is still not a bad bargain in anybody's book!

Commercial air cargo carriers such as Airborne Express, Federal Express and others were called upon to meet an unparalleled surge. For the first time since its inception, the Civil Reserve Air Fleet was activated, and selected aircraft and crews moved deploying units to Saudi Arabia.

Defense Secretary Cheney declared an airlift emergency on 17 January and activated stage two for the CRAF. The additional 19 . . . aircraft were immediately thrown into the effort to clear the APOEs. . . . With the latest CRAF assets plus additional surface shipping, the situation never became unworkable.

The depot has spent \$1.1 million in overtime since the beginning of *Desert Shield*. This figure could have been much higher, but many of the civilian workers, fully aware of the nation's budget problems, refused to take overtime pay for their long hours of work.

Supporting *Desert Storm*

On 16 January, *Desert Shield* changed to *Desert Storm* as allied forces began to enforce the UN sanctions. The pace for the depot did not change much except for increasing off-line requisitions that were called or faxed to the depot. There was a modest increase from approximately 40 to 70 per day. This was in contrast to the thousands called in during the early days of deployment. Units have now learned that using the established systems works well, and emergency calls are not necessary.

Work loads grew steadily during the first week. Repair parts for major end-items appear to have been most in demand, but orders for lubricants of all types were also being ordered at an increased rate. Work loads at the CCPs remained heavy, as well as at the APOEs. This became our major concern during the week of 21 January, since the increased demand for repair parts to support the air war required instant response.

Defense Secretary Dick Cheney declared an airlift emergency on 17 January and activated stage two for the CRAF. The additional 19 civilian cargo aircraft were immediately thrown into the effort to clear the APOEs. The backlog would not be worked through in a short time, but with the latest CRAF assets plus additional surface shipping, the situation never became unworkable.

The challenges of supplying a force of this size deployed half a world away have not been easy. The complexities of logistics support to an operation such as *Desert Shield* and now *Desert Storm* must be studied by professional soldiers. This article primarily addresses the efforts and experiences of one depot. DLA operates five other depots, and each could mirror the report presented here. Likewise, each service operates depots and supply centers, and all of them have played major continuing, supporting roles in *Desert Storm*.

Finally, it must be noted that only the Continental United States, or sending end of this massive logistics operation, has been discussed here. Undoubtedly, the effort, experiences and lessons produced on the receiving end in the Saudi desert will be as significant. Others will later relate those lessons and more to enhance our ability to support our combat forces. As *Desert Shield* and *Desert Storm* have so vividly shown, modern logistics is a global effort, and we must be ready and able to plan and execute a *Desert Shield* in the future. **MR**

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The READINESS GROUP's ROLE in MOBILIZATION

Major John W. Lemza, US Army

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In the rapid and continuous mobilization of Reserve forces for deployment to the Persian Gulf, much attention and effort went quickly into preparing these units and soldiers. Active Component readiness groups rapidly redirected their actions to training and evaluating deploying units at mobilization stations. The author describes the efforts of one readiness group that contributed to this essential mission.

OPERATIONS Desert Shield and Desert Storm in the Persian Gulf have required enormous amounts of personnel and materiel to be deployed into that theater. Active Component (AC) forces deployed first and were quickly reinforced with a myriad of Reserve Component (RC) elements. Many of us witnessed firsthand, on television, the RC response to the presidential call-up. A common sight for weeks was RC units deploying from their mobilization stations, leaving a wake of waving, tearful families. This rapid mobilization exercised existing plans and stressed a system that had not been tested as vigorously since the Vietnam War. Many of the pieces of this system fell under scrutiny as each was "pressure-tested."

Among the important pieces that were tested were the readiness groups (RGs). Assigned a

peacetime mission of providing technical and tactical advice on an area basis to RC units, their prescribed wartime mission pulled them directly into the mobilization mechanism. From routine duty as RC coaches, many RGs quickly became integral parts of mobilization stations, now responsible for verifying the training readiness of deploying RC units. This successful transition was the result of rapid mission analysis, correct task organization, and unit and individual adaptability.

Advisers from RG Lee stationed at Fort Lee, Virginia, first learned of the gulf crisis in early August while participating in annual training with the 29th Infantry Division (Light), Fort Bragg, North Carolina. The impact on the RG and the division was not apparent at first, but rumors were plentiful as planeloads of 82d Airborne

Division soldiers began to depart. As the training period wound down, the RG command group received a warning order from Headquarters (HQ), First US Army (FUSA), to be prepared to transition to the mobilization support mission.

A shower of classified messages arrived, listing RC units selected for mobilization and the dates they would arrive at designated mobilization stations. The majority were combat service support, quartermaster and transportation units. The short lead time available before the units' arrival date required a rapid but thorough mission analysis.

Concurrently, a shower of classified messages arrived, listing RC units selected for mobilization and the dates they would arrive at designated mobilization stations. The majority were combat service support, quartermaster and transportation units. The short lead time available before the units' arrival date at their respective stations required a rapid but thorough mission analysis to be conducted. That analysis considered directed guidance from FUSA, specified tasks from existing mobilization plans and implied tasks.

Guidance from HQ, FUSA, came in the form of a message listing common tasks to incorporate into training plans at all mobilization stations. That list emphasized NBC (nuclear, biological and chemical) skills but also directed that all RC soldiers be trained and tested on all associated tasks for threat vehicle and aircraft identification, hand grenades, M72A2 LAW (light antitank weapon), AT4 and land mines. Additional instructions required the RG to form three mobilization assistance teams (MATs) to support three mobilization stations. This was in lieu of the primary mission of supporting only one at Fort A. P. Hill, Virginia. The add-on requirements were to support stations at Fort Eustis, Virginia, and Fort Lee.

Existing mobilization plans included specified

tasks to be executed by the RG at each station. Most important was the requirement to verify each RC unit's training readiness before it deployed overseas. This statement of readiness would be communicated to the mobilization station commander (normally the post commander) in writing by the RG commander or his representative on each MAT. Along with verifying equipment readiness and individual military occupational specialty (MOS) qualification (both accomplished by on-post activities such as the Directorate of Logistics), it was necessary to obtain a seal of approval before unit deployment.

As the mission analysis process continued, certain implied tasks became apparent. The RG command group realized that to properly effect its mission, a line of communication with the mobilized RC unit would have to be opened as soon as possible. Preferably, contact should be established at the unit's home station.

This contact was an RG liaison team that provided a link between each RC unit and the AC mobilization station and MAT. As they developed, liaison teams consisted of an officer and a noncommissioned officer (NCO). When possible, branch affiliation was used.

Additional implied tasks included conducting initial evaluations to determine a unit's level of personnel, equipment and training readiness before it arrived at the mobilization station. This information was later used to lay the foundation for developing plans to correct shortfalls in these areas. This was manifested in requesting training resources and requisitioning parts, components and end-items before the RC unit arrived. (With a few exceptions, units were manned at close to 100 percent upon their arrival.)

Once this mission analysis was complete, the RG commander saw the scope of his commitment and began aligning his assets against the need. A task organization was tailored that would facilitate mission accomplishment. The organization that developed had three components: an HQ section, three MATs (at Forts Lee, Eustis and A. P. Hill) and a combat arms support team. The unit liaison teams were designated as unit monitors and reported directly to the RG



An RG liaison team . . . provided a link between each RC unit and the AC mobilization station and MAT. As they developed, liaison teams consisted of an officer and a noncommissioned officer. When possible, branch affiliation was used. Additional implied tasks included conducting initial evaluations to determine a unit's level of personnel, equipment and training readiness before it arrived at the mobilization station.

commander or MAT chief.

The HQ section served as the command and control (C²) element for the entire RG. Composed of the RG command section and administration and supply elements, its structure was not changed by the new mission. This enabled normal internal administrative functions to continue and provided an interface with higher HQ. By remaining unchanged in composition, this section remained an existing logistic base. This was important during mission execution for coordinating vehicles, ammunition and external support.

The three MATs had similar internal organizations to conduct C², training/evaluation and internal support. The small C² cell served as the interface with the post staff and coordinated MAT activities. The training/evaluation section conducted the required training and assisted in evaluations and qualifications. The internal support section provided administrative and logistic functions for the MAT. Often, a civilian member of the RG maintenance assistance/instruction team (MAIT) augmented the MAT and added a capability to conduct technical inspections on RC weapons and vehicles.

The key to effectively managing the large re-

quirement for weapons qualifications was the combat support team. Consisting of all the RG combat arms members (officer and NCO), this team traveled between each of the MAT posts to plan, coordinate and conduct the qualification ranges. The spectrum of weapon systems included pistols, M60 and M2HB machineguns, M72A2 and M136 LAWs, M203 grenade launchers and M249 automatic weapon systems.

In addition to conducting qualification for the weapon systems, the team members conducted the primary rifle instruction for the M16 and mechanical training for the machineguns. This followed a train-the-trainer format to afford RC unit first-line supervisors the opportunity to train their soldiers before they reached the ranges. It also alleviated a potential manpower shortfall from an already fully committed combat support team.

Unit monitors from the RG (officer and NCO) provided a critical link early on. Traveling to the RC unit home station before deployment to the mobilization station, they contacted the unit chain of command and accomplished several important tasks:

- Verifying personnel and equipment densities.

Traveling to the RC unit home station before deployment to the mobilization station, [unit monitors] contacted the unit chain of command and accomplished several important tasks: verifying personnel and equipment densities[,] verifying equipment shortfalls[,] building a tentative training plan [and] alleviating RC unit concerns about the mobilization.

- Verifying equipment shortfalls (end-items and sets, kits and outfits).
- Building a tentative training plan.
- Alleviating RC unit concerns about the mobilization.

All of the information the unit monitors obtained was shared with the MAT and mobilization station post staff. This enabled the training plan to mesh smoothly with the predeployment preparation for equipment and personnel for which the post was responsible (activities such as processing personnel records, requisitioning equipment shortfalls and painting vehicles).

As would be expected, this mission-tailored task organization consumed all available manpower in the RG and required augmentation to fill several open billets. FUSA adequately supported this by coordinating the assignment of knowledgeable officers and NCOs from nonactivated state RC units. These additional personnel were used in the RG C² section as unit monitors, MAT operators and, in the combat support team, as trainer/evaluators.

Filling positions in this mission task organization required a great amount of adaptability and flexibility among the members of the RG. At the group level, it required a rapid transition to a wartime structure, and individually, it required a

mental transition from branch-specific adviser to branch-immaterial planner and trainer.

The transition, which generated a tailored task organization, required internal unit structures to be redrawn. Branch-affiliated teams were often fragmented, with members reassigned to different sections in the new task organization. The infantry team, for example, provided personnel to both the combat support team and the MAT for Fort A. P. Hill. Other elements such as the RG administrative support team were entirely dissolved to provide personnel across the organization. During this transition, duty and supervisory responsibilities were redesignated quickly and smoothly, exhibiting a unique organizational adaptability.

This flexibility was based, in part, on the high level of individual soldier skill proficiency of each RG member. This was the result of an active year-round training program that RG Lee had established. It enabled each adviser to function effectively on the range, in the classroom or as a unit monitor. This was complemented by a wide range of Active Army experience among the RG members. Many of the officers and NCOs had recently arrived from AC units where their responsibilities included weapons qualification and common-skills training.

As RC units continued to mobilize to support Operation *Desert Storm*, the effectiveness of their predeployment training can be traced back to the RGs. Quick to transition to a wartime mission, this AC resource is extremely adaptable, with members already prepared to assume roles as trainers and evaluators. As we look forward to a future Army of diminished size, the RGs' performance in the massive mobilization efforts of Operations *Desert Shield* and *Desert Storm* can serve as an important indicator of the role AC RGs may be called to fill when RC units must quickly transition from peacetime to wartime readiness. **MR**

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Legal Assistance for Those Who Go in Harm's Way

Major Gregory M. Huckabee, US Army

When the orders were issued for more than 400,000 US servicemen and women to deploy to the Persian Gulf, a major effort was mounted to satisfactorily handle each member's personal affairs. The author describes how thousands of staff judge advocate personnel provided the briefings, counseling and administrative assistance support needed to support these service members and their families as they responded to our nation's call.

[To] stand up for what's right, and condemn what's wrong all in the cause of peace. America will stand by her friends. No one, friend or foe, should doubt our desire for peace; and no one should underestimate our determination to confront aggression. If history teaches us anything, it is that we must resist aggression, or it will destroy our freedoms.

President George Bush

ON 2 AUGUST 1990, the world awakened to discover that Iraq had invaded the tiny nation of Kuwait and had set in motion a chain of events that threatened to unleash a modern-day Armageddon in the Middle East. Saddam Hussein's rapid employment of 200,000 troops in conquest of Kuwait sent shock waves throughout political capitals, and military headquarters were caught off guard by the unprovoked aggression.¹

The United States quickly responded, deploying its Armed Forces as a manifestation of its political will to thwart Iraqi adventurism.² By January 1991, more than 400,000 US military personnel, many from the Reserve Component (RC), were deployed to support what became known as Operation Desert Shield.

"Zero Hour"

The Cable News Network (CNN) breaks the story shortly after the White House press secretary announces the president's decision to deploy

US forces to Saudi Arabia and the Persian Gulf. The United States later decides to call up 50,000 RC personnel in support specialties. The telephone rings, and the Reserve unit's first sergeant is on the line:

"Sergeant Smith, the balloon just went up and the CO [commanding officer] wants everyone to report to the armory at 0700 tomorrow, packed and ready to load out to Fort McClellan [Alabama] for mobilization."

The deputy staff judge advocate (SJA) notifies the chief of legal assistance, Captain Bowers, that the installation mobilization center is commencing preparation for oversea movement (POM) of RC personnel in 12 hours. Informed to expect 500 to 1,000 personnel a day for processing, Bowers pulls out her mobilization center legal annex and POM standing operating procedure (SOP) guide.

A cohesive effort, taking advantage of years of extensive legal experience and sophisticated computer equipment, swings into action to assure that every deploying soldier has his important personal affairs completely in order. Lessons learned from Grenada, Gander and Panama confirm that every ounce of legal prevention is worth a pound of judicial cure. During Operation Desert Shield, critical legal assistance was provided to sustain Active Component (AC)

Some commercial life insurance policies commonly contain clauses excluding coverage under certain conditions such as military aviation accidents, terrorist incidents, foreign hostilities or war-related injuries. . . . If a deploying soldier suspected he might own such a policy, the soldier received a list of 10 locally accessible commercial life insurance companies offering term life insurance not containing any form of military exclusion.

and RC forces and their families during the most rapid large-scale deployment of the Armed Forces in our nation's history.

Legal Support for Deploying Soldiers

Unit Briefings. More than 60 Army installations provided on-the-spot legal services during POM processing of more than 200,000 AC and RC soldiers.³ During the beginning of POM processing, soldiers received briefings from a host of service support agencies on assistance they would get and what actions were required of them. Judge advocate representatives actively participated in the briefings, explaining the nature and legal effect of general and special powers of attorney, circumstances under which wills were appropriate and the effect of commercial life insurance policies containing exclusionary war clauses.⁴

After the briefings, soldiers processed through the POM stations receiving individually tailored legal documents before leaving the mobilization center. During the first 60 days of *Desert Shield*, judge advocates prepared more than 40,000 wills and 70,000 powers of attorney for deploying soldiers.⁵

The Legal Automation Armywide System (LAAWS) helped enable judge advocates to achieve these herculean results. This computer software was designed by and for the Judge Ad-

vocate General's Corps. Using the latest update of this program (LAAWS III) distributed to the field in July 1990, judge advocates provided individual state wills and powers of attorney in minutes after interviewing soldier-clients.⁶

War Clause Insurance. Before departing the POM center, judge advocates screened commercial life insurance policies for military-exclusion clauses.⁷ Some commercial life insurance policies commonly contain clauses excluding coverage under certain conditions such as military aviation accidents, terrorist incidents, foreign hostilities or war-related injuries, accidents or illnesses.⁸ If a deploying soldier suspected he might own such a policy, the soldier received a list of 10 locally accessible commercial life insurance companies offering term life insurance not containing any form of military exclusion.⁹ This enabled soldiers to temporarily replace exclusionary insurance at minimal cost for the period of deployment.

Family Support Briefings. If communication is the key to success, family support briefings provided critical information on what was really happening. Both in Europe and in the Continental United States (CONUS), installations organized command briefings for family members in local theaters, gymnasiums and recreation centers.¹⁰ Representatives from various command group agencies gave presentations on finance, medical and dental service, counseling, commissary and exchange privileges, identification cards, Army community services and legal assistance issues. As a result, families sought legal assistance in greater numbers than when soldiers were in garrison.¹¹

Protecting the Home Front

Judge advocates who remained in garrison both in CONUS and in Europe have been committed to supporting the families deploying soldiers left behind.

Family Assistance Centers (FACs). FACs were established in European military communities and on CONUS installations to provide immediate response to family inquiries and needs.¹² For example, 1st Armored Division SJA person-

nel staffed the Nuremberg *Desert Shield* FAC daily from 0730 to 2200 and from 0900 to 1700 on weekends.¹³ In addition, the 1st Armored Division SJA duty officer provided support 24 hours a day.¹⁴ Throughout *Desert Shield*, FACs served as vital sources of assistance for this family informational network.

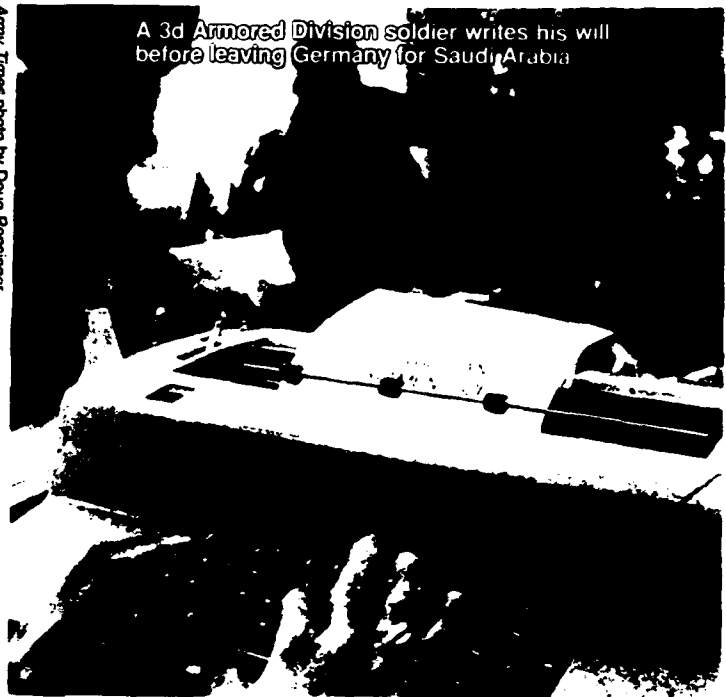
Media. To further assist families at home, judge advocates prepared preventive law articles in installation and local newspapers and in informational handouts. Subjects included the Soldiers' and Sailors' Civil Relief Act (SSCRA), veterans' reemployment rights, purchase and sale of automobiles, rental contracts, insurance, Civilian Health and Medical Program of the Uniformed Services (CHAMPUS) and consumer protection issues.¹⁵ Armed Forces Network radio and television kept family members informed of the legal services available to the military community.¹⁶ An informed family member is a forearmed one, and this media use eased some of the anxiety experienced by the loss of the sponsor.

SSCRA. Initially enacted in 1918, resurrected in 1940, substantially amended in 1942 and again 10 times thereafter, the SSCRA is Congress' declaration that those who go in harm's way exercising our national will shall neither be taken advantage of nor neglected at home during their term of service.¹⁷ Congress has foreseen that a call to active duty materially affects a Reservist's ability to meet his or her prior financial obligations. The call-up of 50,000 Reservists during the first 60 days of *Desert Shield* triggered a number of important provisions in the SSCRA.

The most favorable and well-publicized SSCRA provision is applying a 6-percent interest cap on all indebtedness existing before the Reservist's call to active duty.¹⁸ This applies to all credit card, mortgage, car, business and personal loans, except government student loans which statute exempts.¹⁹

To illustrate, if a Reservist has a home mortgage loan of 12 percent, the SSCRA reduces the interest rate to 6 percent for the period he is called to active duty. Because many Reservists

Army Times photo by Doug Persinger



A 3d Armored Division soldier writes his will before leaving Germany for Saudi Arabia

Soldiers received briefings from a host of service support agencies on assistance they would get and what actions were required of them. Judge advocate representatives actively participated in the briefings, explaining the nature and legal effect of general and special powers of attorney, circumstances under which wills were appropriate and the effect of commercial life insurance policies containing exclusionary war clauses.

suffer reduced income upon call-up, most have elected to lower overall loan payments. Some Reservists, however, have chosen to have their payments remain the same, increasing their principal payment in an amount corresponding to the reduction in interest.

Another attractive SSCRA provision involves terminating leases and rental agreements.²⁰ Under this provision, Reservists called to active duty may unilaterally break lease or rental agreements, regardless of their contractual duration.²¹ Notice to the lessor (landlord) must be in writing, and termination of the agreement

becomes effective no earlier than 30 days after the next date regular payment is due.²² This materially assists Reservists who no longer need housing when they are deployed, and it relieves them of a major contractual burden caused by their call to active duty.

The SSCRA contains other protection for both Reserve and active duty personnel. The act also requires that its provisions be disseminated

The SSCRA is Congress' declaration that those who go in harm's way . . . shall neither be taken advantage of nor neglected at home during their term of service The call-up of 50,000 Reservists during the first 60 days of Desert Shield triggered a number of important provisions in the SSCRA.

to those already serving and persons entering military service.²³ To fulfill this obligation, judge advocates distributed this information at POM centers, unit briefings and through handouts.²⁴

Veterans Reemployment Rights Law. A critical concern of Reserve personnel is their civilian reemployment status upon release from active duty. Judge advocates used handouts at POM centers and unit briefings to inform soldiers of their rights under the Veterans Reemployment Rights Law.²⁵ Under the statute, Reservists must apply for reemployment within 31 days after release from active duty. The law requires employers to reinstate the Reservists in their former positions or positions of similar status, seniority and pay.

Importantly, Reservists do not simply get back on the seniority ladder at the point they left it; instead, they are placed at the point they would have reached without the interruption of service.²⁶ Furthermore, regarding employer group health plans, Reservists must be able to continue coverage at their own expense.²⁷ Dissemination of this information both written and orally at the outset of mobilization reduced

the anxiety and frustration encountered by the almost "no notice" call-up.²⁸

"Call in the Cavalry": Using RC Judge Advocates

As *Desert Shield* increased in scope and size, a commensurate need for RC judge advocate support quickly surfaced. Many Reserve judge advocates were called to active duty. Some were deployed to Saudi Arabia; others provided critical sustainment support in CONUS by replacing deploying installation judge advocates. Reservists filled the gap in the legal staffs at Fort Bragg, North Carolina; Fort Campbell, Kentucky; and Fort Stewart, Georgia.²⁹

As state National Guard units were activated in Georgia, Texas and Mississippi, both unit judge advocates and installation SJA offices prepared personnel for mobilization. Many hands make light work and, where needed, National Guard judge advocates received mobilization legal support from installation SJA offices such as Fort Meade, Maryland, and Fort Sam Houston, Texas. Service is the backbone of legal assistance, and the assistant judge advocate general for military law made support for RC judge advocates a major mission of installation SJA offices.³⁰

Tax Assistance

Under current law, military personnel must file personal income tax returns by 15 April, even after they deploy. Soldiers receive an automatic 60-day extension to 15 June by noting on the tax return that they have been deployed overseas with *Desert Shield*.³¹ Soldiers may get an additional automatic 60-day extension to 15 August by filing Internal Revenue Service (IRS) Form 4868, but this extension does not suspend liability for any interest or penalties owed.³²

The Department of Defense Armed Forces Tax Council, composed of the chiefs of legal assistance from each of the services, played a critical role in assisting the introduction of legislation before Congress that would grant a filing, penalty and interest moratorium for *Desert Shield/Desert Storm* personnel. On 30 January

A 1st Infantry Division soldier takes care of his will and power of attorney, Fort Riley, Kansas.



FACs were established in European military communities and on CONUS installations to provide immediate response to family inquiries and needs. For example, 1st Armored Division SJA personnel staffed the Nuremberg Desert Shield FAC daily from 0730 to 2200 and from 0900 to 1700 on weekends.¹³ In addition, the 1st Armored Division SJA duty officer provided support 24 hours a day.

1991, Congress enacted Public Law 102-2 which granted military personnel six months after their service in the Gulf ended to file and pay taxes.³³

Statutory authority exists for the president to exempt military income earned in a combat zone.³⁴ On 21 January 1991, for the first time since Vietnam, President George Bush exercised this authority by declaring the Persian Gulf a combat zone effective 17 January 1991. Under this declaration, income earned by enlisted personnel and warrant officers in the Persian Gulf is tax-free. Moreover, up to \$500 per month of commissioned officers' pay is similarly exempt from federal income tax.

To meet the tax needs of deployed soldiers, the Army Legal Assistance Office sent more than 450,000 tax forms and publications to the Persian Gulf area.³⁵ Furthermore, Army legal assistance prepared and the Department of Defense

produced a special 45-minute videotape titled "Tax Tips for Military Personnel."³⁶ On 10 January 1991, 500 tapes were mailed to Army Central Command, Saudi Arabia, for distribution to unit-level organizations.

On 1 February, the home-front installation tax centers opened their doors. Installations such as Fort Hood, Texas, Fort Sill, Oklahoma, and Fort Lewis, Washington, offer one-stop tax assistance to family members who must shoulder tax-filing responsibilities in the absence of their sponsors. Many tax centers even offer free electronic tax filing that significantly speeds the refund process, getting money into the hands of those who need it most. A spouse or family member can file a return on behalf of an absent soldier using an IRS power of attorney or LAAWS (JAG-generated) general power of attorney executed by a soldier to his or her representative. Substantial numbers of these powers

Under [one SSCRA] provision, Reservists called to active duty may unilaterally break lease or rental agreements, regardless of their contractual duration. Notice to the [landlord] must be in writing, and termination of the agreement becomes effective no earlier than 30 days after the next date regular payment is due.

Under the Veterans Reemployment Rights Law . . . Reservists must apply for reemployment within 31 days after release from active duty. The law requires employers to reinstate the Reservists in their former positions or positions of similar status, seniority and pay.

of attorney were sent in the Army legal assistance shipment of tax forms to Saudi Arabia in January 1991.³⁷

The legal assistance supporting *Desert Shield* described here constitutes only the "tip of the iceberg" of the total legal support furnished by AC and RC judge advocates, civilian attorneys, and enlisted and civilian personnel. As a service

support branch, the judge advocate mission focuses on relieving soldiers from worrying about personal legal problems while they are taking care of the nation's most important business. To that end, staff judge advocates overseas and at home served to shield those in the desert so that they could freely go in harm's way on our behalf.³⁸ **MR**

NOTES

1. *U.S. News & World Report*, "The Guns of August," (20 August 1990):18-26.

2. *Ibid.*

3. Memorandum from Colonel Thomas M. Crean, US Army, Europe, judge advocate, to chief, International Affairs Division, "Non-Inclusive List of Judge Advocate Support to Family Members of Deploying Desert Shield Soldiers," 3 December 1990.

4. Memorandum from Brigadier General Donald W. Hansen, assistant judge advocate general for military law, to command and staff judge advocates, "Operation Desert Shield Legal Assistance Issues," 5 September 1990.

5. Information Paper, Lieutenant Colonel Donald L. Hansen, chief, Army legal assistance, "Legal Assistance to Active and Reserve Component Soldiers and Family Members During Operation Desert Shield," 17 December 1990.

6. W. Polk, *Operation Desert Shield: Preparation for Overseas Movement*, Military Law Review Legal Assistance Symposium (Pending pub. 1991).

7. Information Paper, Hansen, 17 December 1990.

8. *Ibid.*

9. *Ibid.*

10. Memorandum from Brigadier General Donald W. Hansen, 5 September 1990.

11. Information Paper, Hansen, 17 December 1990.

12. Memorandum from Brigadier General Donald W. Hansen, 5 September 1990.

13. *Ibid.*

14. *Ibid.*

15. *Ibid.*

16. *Ibid.*

17. Act of 17 October 1940, ch. 888, 54 STAT 769 (54 Statutes at Large 769) (1940) (codified, as amended, at 50 USC [Title 50, US Code], Section (Sec.) 501-591).

18. *Ibid.*, Sec. 206.

19. 10 USC, Sec. 1078(d).

20. Act of 17 October 1940, ch. 888, 54 STAT 769, Sec. 304.

21. *Ibid.*

22. *Ibid.*

23. *Ibid.*, Sec. 105.

24. Memorandum from Major General William K. Suter, acting judge advocate general, to command and staff judge advocates, "Presidential Order to Active Duty of Reserve Components," 28 August 1990; and Information Paper, Hansen, 17 December 1990.

25. 38 USC, Sec. 2021-2026.

26. *Human Resources Management, Ideas and Trends in Personnel*, no. 229. (31 August 1990):157-60.

27. *Ibid.*

28. 38 USC, Sec. 2021-2026.

29. As of 22 January 1991, 40 Reserve and 203 active duty judge advocates were deployed to support Operations Desert Shield and Desert Storm. A sizable number of additional Reservists were expected to be called to provide support to sustaining base installations and to fill additional theater requirements.

30. Memorandum from Brigadier General Donald W. Hansen, assistant judge advocate general for military law, Office of the Judge Advocate General, to command and staff judge advocates, "Operation Desert Shield Legal Assistance Issues III," 20 December 1990.

31. Information Paper, Lieutenant Colonel Donald L. Hansen, chief, Army legal assistance, Office of the Judge Advocate General, "Tax Assistance to Troops Involved in Operation Desert Shield," 11 December 1990.

32. *Ibid.*

33. H.R. (House of Representatives) 4, 102d Congress, 1st Session (30 January 1991).

34. Internal Revenue Code, Sec. 112 (a) and (b).

35. Information Paper, Hansen, 11 December 1990.

36. *Ibid.*

37. *Ibid.*

38. The author is indebted to Lieutenant Colonel Donald L. Hansen, chief, Army legal assistance, and Major Richard D. Rosen for their support in the writing, reviewing and editing of this article.

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WILL the red cross really make sense in the future battlefield? The widespread perceptions throughout the world and in contemporary writings suggest that the elements we expect to encounter on the future battlefield will not refrain from attacking medical facilities, vehicles or personnel simply because they are identified as medical forces. It now appears evident that, in today's multipolar world, it is more difficult to determine who our potential adversaries are; this causes even more uncertainty as to what respect we can expect for medical operations from the variety of antagonists we may face on the future battlefield.

This issue is crucial for medical forces. The degree to which medical operations are allowed to be exempted from the battle directly impacts the

conduct of these operations. Our doctors and nurses save lives even in the worst-case scenarios, working by the rules of war that protect the wounded. Patients who have been stealthily moved from the fields of hostile ground on stretchers to a well-equipped mobile army surgical hospital (MASH) that operates openly, without the need of secrecy, functioning at its full medical potential on patients who were wounded only a short time before and promptly evacuated in ground and air ambulances.

Whether Soviet forces would respect our medical operations on the European battlefield, was and remains, a difficult question, but we no longer have the luxury of planning for a single opponent or battlefield. We must be ready for

virtually anything. Our potential adversaries, for training and planning purposes, now number not only our enemies but also many countries we do not expect to fight. Our possible levels of conflict range from unrestricted engagements, spanning whole continents, to limited conflicts, no less intense but of lesser scope, to contingency operations in Third World countries.

Our medical forces must be able to function in any combat environment. They must strictly comply with the rules of conduct for medical forces to receive internationally accepted guarantees of respected operation. If not respected, they must do as well as they can in whatever circumstances they encounter, which may entail fighting for their own lives, as well as their patients'.

Medical forces and the combat commanders who ultimately command them cannot be trained for every situation—there are too many uncertainties and variables. However, they can be trained in the laws of war and the skills of combat. A thorough understanding of the laws of war relating to medical operations will enable commanders to analyze the situation and decide either how to operate within the limits of international law or to engage in unprotected combat medical operations.

As the world and our missions change, we must be prepared to face whatever the future brings. A fresh look at medical operations is necessary, and such analysis involves a matrix of interrelated factors.

Factors Controlled by Law

Legal considerations must form the backbone of critical planning and decision making that directs medical support for our forces at war. The Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 12 August 1949 (hereafter, simply GWS) represents an international effort that began in the last century to make battlefield medical care possible.¹ When the GWS was ratified by the US Senate in 1956, it became part of the body of law that rules our nation. As such, it represents not only law for each American citi-

zen and soldier but also the stated foreign policy of this nation.² The power to change or deviate from this treaty rests only with the president and Congress through specific legislation. To say that individual officers do not have the authority to make US foreign policy seems to be an obvious statement. Nevertheless, the legitimacy attached to the GWS seems to go unappreciated by many soldiers today.

These legal underpinnings have two primary effects on medical operations. First, medical personnel are armed only with defensive arms—pistols and rifles.³ Second, medical facility design and equipment are geared to conflict anticipating protective status—they are generally large and vulnerable. Additionally, while equipment is difficult to change once conflict starts, training and doctrine have momentum also, and we will go to war with all of these aspects of medical operations.

In the training and doctrine area, the GWS makes it clear that medical personnel may use their weapons only for their own defense and the defense of their patients.⁴ This does not mean they may defend their medical facility from capture—they may not.⁵ Even if supported by military police forces, the medical treatment facility (MTF) may not be defended from capture.⁶ This does mean, however, that should an MTF be treacherously attacked by forces not respecting its medical status, its personnel can fight back to the best of their ability.⁷ There may also be elements on the battlefield seeking haven or profit from medical facilities (commonly called marauders), and MTF personnel may defend against them at any time.

It is also important to note that all persons assigned or attached to a medical unit, regardless of military occupational specialty (MOS) or specialty skill identifier (SSI), are subject to the same limitations.⁸ Doctors, truck drivers and administrative personnel are "medics" of equal respect and limitation.⁹ For this reason, no medical unit personnel can be tasked with defending the perimeter of a cluster that includes nonmedical units or with assisting nonmedical units in such defense.¹⁰ Our medical personnel will en-

ter conflict neither equipped nor trained to engage in combat in earnest. This does not mean that medical personnel are not trained in basic soldier skills. Rather, in terms of combat power, their ability is understandably commensurate with their equipment and training.

The role of Standardization Agreements (STANAGs) must be included in any discussion of the law relating to medical services. In these STANAGs, the United States and allied countries prescribe how mutual matters relating to the battle will be handled. They are necessary so that each allied government's doctrine and procedures are compatible with the others'. STANAGs represent US doctrine that all US soldiers must obey.¹¹

In the European scenario, NATO STANAGs, for example, provide that medical facilities will not be camouflaged except temporarily.¹² The order may be given only by a brigade commander or higher, must be local and must be countermanded as soon as possible. Army Regulation (AR) 750-58, *Maintenance of Supplies and Equipment, Painting, and Marking of Army Material*, further restricts the authority to order camouflage to major tactical commanders—presumably, the corps and division commanders. The AR is separate from and subservient to the STANAG in this instance, since the STANAG is an international agreement.¹³ By separate NATO STANAG, red cross markings are required on all medical vehicles and may not be removed at any time even though the entire vehicle may be camouflaged.¹⁴

Equipment and Doctrine

Physical size and personnel presence, both patient and provider, are primary considerations for MTFs in the combat zone (the area forward of the corps rear line). Present US doctrine, anticipating respect for medical assets, provides for large, unconcealable facilities. There are three corps-level hospitals: the MASH, 60 beds and 230 personnel; the combat support hospital (CSH), 200 beds and 440 personnel; and the evacuation hospital (EVAC), 400 beds and 342 personnel. The smallest, the MASH, covers

Our doctors can work to save lives even in the worst-case scenario—in hidden bunkers, working by flashlight on patients who have been stealthily carried over miles of hostile ground on stretchers. But they can save many more lives in a well-equipped [MASH] that operates openly . . . at its full medical potential.

about eight acres and the largest, the EVAC, covers more than 20 acres.

Presently planned force structure changes will eliminate the EVAC and change the size of the MASH and CSH. The new CSH, using the Deployable Medical System (DEPMEDS) will cover about 28 acres. The MASH is 100-percent mobile with organic equipment, but the larger hospitals are only about 10-percent mobile.

Forward, in the division area, MTFs consist of the main support battalion (MSB) medical company and the forward support battalion (FSB) medical companies. In divisions that have not gone to the support battalion structure, a medical battalion with separate medical companies provides similar support. Division-level medical support in battle does not hold any wounded for extended periods; most wounded are stabilized to evacuate rearward. Minor injuries or illnesses may be held for up to 96 hours in the rearmost division medical company.

In the battalion areas, the battalion aid station (BAS) provides initial medical care. This is a small "tailgate" facility that is highly mobile. Its purpose is to do only the minimum necessary to allow a patient to be evacuated farther to the rear.

All MTFs are vulnerable in combat. No protection is afforded by vehicles or equipment, and sites in the combat zone will probably not be dug in. In the DEPMEDS facilities, site layout must be on a flat, prepared piece of ground, and the equipment must be level and arranged in precise layouts. Personnel density is high, and the wounded will not be able to seek cover.

Doctors, truck drivers and administrative personnel are "medics" of equal respect and limitation. For this reason, no medical unit personnel can be tasked with defending the perimeter of a cluster that includes nonmedical units or with assisting nonmedical units in such defense.

In general, all MTFs are exceptionally vulnerable to both direct and indirect fire; corps-level MTFs are not concealable, given reasonably well-equipped opponents with intelligence-gathering abilities; and division-level MTFs are probably not concealable either. Battalion-level assets can be, and normally are, concealed.

Mission

The Army Medical Department motto is "Conserve the Fighting Strength." That involves a variety of medical and related areas ranging from field sanitation, preventive medicine, minor medical treatment, dental and optometric services, and major medical tasks such as surgery. In addition, and integral to these functions, evacuating the wounded from the battlefield is a prime function. In practical terms, medical support is essentially the same as maintenance support. Instead of machines, however, the medics maintain and fix soldiers.

Commanders throughout history have learned again and again that their soldiers' health is a vital component of combat power; a soldier can be removed from action just as effectively by disease or accident as by bullets. An entire unit can be rendered combat-ineffective by unsanitary conditions just as completely as by a devastating indirect-fire mission. As an example, in Operation *Husky*, the invasion of Sicily in World War II, battle injuries were 17,375, while disease and nonbattle injuries were 19,475.

The secondary effect of medical service is also crucial, and here the parallel with machines ends. Soldiers fight better when medical care is

present and effective. The commander must accept that evacuating and treating the wounded significantly impacts the fighting ability of the remaining soldiers. It boosts their morale to know that medical care is readily available.

The challenge that medical forces face is to provide medical services that will preserve the commander's combat power at its highest potential. Historically, armies that have done this have augmented their combat power relative to their adversaries. While there are certainly parallels in other missions, there are unique aspects to the medical mission. The condition of a tank with a broken system will not worsen as time passes. An injured human body, however, will not wait.

To function, patient care must be prompt and unrelenting. Every minute spent on nonmedical tasks detracts from the mission. Obviously, the battlefield will interrupt medical care with a variety of problems. But, if medical care is to perform to its potential, the MTF must be isolated to the greatest degree possible from the battle.

To the degree that the laws of war allow medical operations to function openly and efficiently, those laws facilitate medical operations. Haste and openness are direct factors in the survivability of wounded soldiers. The survival ratio will be high if the wounded can be promptly evacuated by rapid and open means to well-equipped facilities that are conveniently located to receive them.

The Enemy

In preceding sections, the vulnerability of medical forces and the susceptibility of medical operations to interference were discussed. It should be obvious that the enemy's intentions toward medical forces are a vital operational concern to the commander.

However, a review of our doctrine reveals no mention of the concept of the "threat to medical forces." Presumably, this is because our country and virtually every other nation in the world have signed the GWS. Our nation's posture is that respect for medical operations has been settled by international agreement—we will fol-

A 24th Infantry Division soldier receives a shot before being deployed to Saudi Arabia.



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low the GWS and expect our opponents to do likewise.

While the matter may seem settled at our national level, commanders at lower levels perceived a doctrinal void. Incorporating medical assets into a single combat service support structure in the heavy divisions (MSBs and FSBs) made it difficult and, possibly, impossible for medics to operate in a traditional internationally accepted fashion. Commanders received no reassurance (or even information in any publication) that enemy forces were expected to follow the GWS and, lacking guidance, apparently assumed the conservative expectation that they would not.

Although cataclysmic struggle on the European battlefield does not seem as likely as it once did, a review of Soviet medical forces is appropriate. The Soviet Union remains our most probable antagonist throughout the world, and per-

haps more important, Soviet doctrine and force structure are found in many former client states worldwide.¹⁵

Soviet force structure includes extensive organic medical assets at every level. Soviet doctrine stresses evacuation with minimum treatment at each level of medical support until the level at which definitive care will be given. Not surprisingly, this approach is similar to our own and most other countries. The demands of battlefield injuries are the same for all nations.

Soviet forces emphasize self- and buddy-aid on an individual level, and there is an organic corpsman at the company level. The BAS, far forward, is manned by a physician's assistant (feldsher) and a small staff. The regimental medical point, 5 to 7 kilometers from the forward edge of the battle area (FEBA), is manned by three physicians and two feldshers (total staff of 25). Division-level medical support is provided

The condition of a tank with a broken system will not worsen as time passes. An injured human body, however, will not wait. To function, patient care must be prompt and unrelenting. Every minute spent on nonmedical tasks detracts from the mission.

by an organic medical battalion, the heart of which is the division medical point (DMP) headed by a staff of five doctors (three are surgeons). Medical battalion strength totals 175 persons, and the DMP should handle 400 casualties per day.

The first Soviet hospital is the mobile field hospital. Wounded should reach this hospital in 24 hours. Since doctrine specifies arrival at the DMP in 12 to 18 hours and the DMP is 10 to 14 kilometers from the FEBA, it may be inferred that the first Soviet hospital is 20 to 25 kilometers from the FEBA. In terms of personnel and equipment, Soviet medical assets at division level compare favorably with US forces where there are 360 medical personnel in the four support battalions in the division. In the Soviet division, there are 325 medical personnel at regiment and division level, and 74 organic and dedicated ambulances. When the smaller size of the Soviet division is factored in, the ratio of medics and ambulances to troops is as good as, and possibly better than, US forces.

In comparison, in the US structure, the BAS is far forward, often at the first defilade. The FSB medical company at brigade level will be outside the range of medium-range enemy artillery, probably 20 to 25 kilometers from the FEBA. The MSB medical company in the division rear would possibly be 35 to 45 kilometers to the rear. The first US hospital, the MASH, located far forward in the corps area, would probably be about 50 to 75 kilometers from the FEBA.

Soviet doctrine heavily stresses using any available backhaul assets to move casualties to the rear. Without a study of Soviet organization-

al tables, this leads the Western observer to assume that medical evacuation assets are lacking. It is more likely, however, that the Soviet system is considering battlefield confusion and the difficulty of movement, since the Soviet ambulance assets are as plentiful as ours.

It is clear that for any combatant on the high-intensity battlefield of today and tomorrow, travel through the rear areas, pummeled by accurate indirect-fire resources, will be slow, hazardous, probably on the backhaul leg of a supply mission and probably in a nonmedical ground vehicle. Many wounded will die due to lack of medical care or the inability to reach the appropriate level of medical care within the time needed for survival.

For the purpose of this article, two points from the preceding discussion are significant. The first is that Soviet doctrine relies heavily on an extensive medical structure. Although reprisals against medical facilities are prohibited by the GWS, if Soviet forces were to intentionally target US MTFs, it would seem likely that the Soviets would assume their MTFs would receive fire also.¹⁶ The second is that forward deployment of medical assets also exposes multiple levels of health care to indirect fire. Soviet MTFs, though smaller and more dispersed than US assets, are consequently subject to the same detection faults as our own and, because of the similarity in missions, are every bit as vulnerable. The Soviet MTFs are also deployed farther forward, thereby increasing their targetability.

It should also be noted that red crosses are frequently seen on Soviet vehicles and MTFs, and Soviet military medical writings comment on this requirement. This certainly will not be the case in every instance but is significant in terms of threat recognition of the role of the red cross. Also, a review of the armament of Soviet medical personnel indicates that medical personnel and units observe the GWS armament limitations.¹⁷ While this discussion certainly does not guarantee that Soviet forces on the European battlefield would respect our medical assets, it does appear that their doctrine and training would make the possibility of such action substantial.

Using the Soviet forces as a benchmark, it is probably safe to say that there are a great many armed forces today (probably including the Soviets') that will respect medical operations as a matter of policy. A forward-looking commander, prepared for combat with as yet unknown foes, must thus consider the high probability of combat in an arena where medical operations are conducted within the strictures of international agreements.

Conversely, there most certainly may, in the future, be belligerents in this world who, through ignorance or intentional policy, do not respect medical operations. There is no harm—indeed it is prudent—in the commander planning and training for such a possibility, as well as the more probable alternative condition.

The commander must simply remember the ground rules: It is US policy to operate according to the GWS and to anticipate such respect from others. We must train our personnel to operate strictly within these international conventions and to anticipate respect from our opponents. This is our primary posture. There is no illegality and no harm in planning for contingencies in which our medics are not respected as long as legal limitations are observed. The GWS strictly limits medical forces in conducting operations harmful to the enemy, but there is ample latitude to allow medical operations to function as well as possible in an atmosphere of purposeful disrespect.

Force Structure

In the US force structure, the medical companies of the support battalions are integral parts of the combat service support structure. There are some significant challenges associated with this structure. If the MTF is marked, it will expose the balance of the support battalion to discovery and will provide excellent order of battle intelligence to the enemy. Combat commanders' reluctance to allow marking of medical assets is not new.¹⁸

However, if the MTF is camouflaged, it still retains its status as a medical asset. The enemy is bound to respect it once its character is discovered, and legally, the medics within are un-

A small boy takes cover behind a jeep as a Marine medical unit comes under sniper fire in the Dominican Republic, May 1965.



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der the same restrictions as if the facility were marked.¹⁹ From a practical standpoint, marked or not, the MTF retains the armament, training and operational limitations with which it entered the battle. It has only pistols and M16 rifles and cannot be expected to contest the

The support battalion MTF is obviously the weak link in the battalion's perimeter; manpower limitations would seem to make any other conclusion impossible. . . . The questions presented by the support battalion structure and its operation without violating the laws of war are difficult. Current doctrine does not adequately guide the field commander in how to handle them.

field with maneuver elements equipped with armor of any sort, or even man-packed, crew-served and indirect-fire weapons. More than weapons, however, the key element in avoiding battle is the need to avoid exposing helpless wounded (including enemy wounded) from further hazard.

Additionally, the support battalion MTF is obviously the weak link in the battalion's perimeter; manpower limitations would seem to make any other conclusion impossible. But putting medical personnel on the perimeter raises a new problem—the weakened medical company would become less mission-capable and would still be the battalion's Achilles heel, perhaps drawing the heaviest pressure against its less potent weapons.²⁰

In divisions that have not adopted the support battalion concept, the medical battalion remains separate from other combat service support assets. This provides more flexibility in locating the integral medical companies and avoids, to a degree, the possibility of providing order of battle intelligence to the enemy. Further, it allows the medical company to be placed much farther forward, if the MTF can expect not to be subjected to intentional targeting (the FSBs will normally be located outside the fan of medium-range enemy indirect fire).

The pros and cons of the support battalion concept are not at issue here. However, even

though medics are, in fact, soldiers, we must realize they are different from all other soldiers. No other soldiers on the battlefield operate under the protection and restrictions that medical units do. No other soldiers can expect not to be fired upon once discovered, and no other soldiers must be prepared to sling arms at the enemy's approach and allow, without question, the presence of armed enemy troops within the unit perimeter. The questions presented by the support battalion structure and its operation without violating the laws of war are difficult. Current doctrine does not adequately guide the field commander in how to handle them.²¹

Viewed from the standpoint of medical operations, in order to anticipate respect for medical forces, a fighting force must itself follow the laws of war. If our division-level medical forces, through force structure, doctrine or ignorance, cause enemies on the battlefield to target medical assets, then we will have lost a tactical advantage. This liability is all the more significant for the medical assets to the division's rear. These assets are increasingly large and less mobile. They are even harder to conceal and are correspondingly more vulnerable. An enemy will not know whether he is dealing with division- or corps-level medical assets, and fluid battle lines may well eliminate geographical distinctions of front and rear.

In addition to the movement of the FEBA, the depth of indirect-fire weapons, to include missiles and air strikes, must be considered. The circular error probability of missiles will become increasingly smaller, and we must anticipate that even Third World combatants will be able to deliver accurate, high-explosive fragmentation and cluster payloads to all of the corps area. Unfortunately, chemical and nuclear capability will probably follow as well.

In terms of high-intensity conflict, it is necessary to have a workable and consistent doctrine that is the same from brigade to corps. If such a concept currently exists, doctrine and training for the scenario in which medical operations are respected is totally lacking. In fact, Army Training and Evaluation Program (ARTEP) tasks sel-

Medical facilities use large generators for electricity and see considerable vehicular traffic.



Because of the mission in which they are engaged, [even small medical elements] will emit signatures associated with valuable combat assets. Failing to advertise medical assets as such may mistakenly invite an enemy fire mission that otherwise would have gone someplace else. The cluster or base commander who orders a medical facility camouflaged expecting to lower his risk may, in fact, be inviting an area fire mission (nuclear or chemical) that he would otherwise have escaped.

dom, if ever, task medical forces or combat commanders to demonstrate their knowledge of medical operations according to the laws of war. But, more important, by failing to require tasks in a scenario where the laws of war are observed, we train soldiers not to anticipate such a scenario and, in effect, train them only to fight as if the laws of war were not followed.²²

This was a weakness on the AirLand battlefield envisioned in Europe where, in fact, Soviet forces would probably have observed medical rights to protection. So, in terms of fighting an undefined future enemy who may or may not be a present ally with the same degree of morality and societal development as our country, our current mind-set is a crucial and glaring weakness. It may inhibit providing medical services and may, in fact, violate the laws of war.

Logic and International Politics

On the AirLand battlefield, commanders expect a life or death struggle of extraordinary pro-

portions. Politics, or more accurately, world opinion, may not be of great concern compared with success in the struggle.

The future battlefield in several of the likely scenarios will not be of such epic proportions, however. The morality with which we conduct our operations may be significant in terms of how world opinion perceives the justness of our cause. A commander fights with every tool at his disposal, and future commanders must not limit their choice of tools by allowing US forces to enter combat unequipped to play by the rules of international combat.

Even in the high-intensity AirLand Battle arena, there are vital tactical dividends to be gained by conducting medical operations according to the laws of war. The high-intensity battlefield will abound in targets. No combatant will be able to conduct all of the fire missions presented, and targets will be placed in priority accordingly. Not surprisingly, attacks by indirect fire, air strike or even rear area squads such as

Medical units must be marked (as required by STANAGs) except in temporary circumstances and must be deployed separately from targetable military forces or objectives. The threat of unprotected isolation is far less for the MTF than the dangers associated with being integrated with purely military targets.

Spetsnaz upon medical units will receive a low priority. There are, quite simply, higher value targets on the battlefield, and marking and advertising a medical unit as such ensures it will fall in the correct priority.

Regardless of marking, however, the enemy in most conflicts will know the medical facility is there. Our smallest hospital, the MASH, covers about eight acres. The second combat zone hospital in the current reorganization, the CSH, occupies about 28 acres. In these areas, personnel will be packed at a density that will not be found anywhere else in the combat zone. Vehicle movements (including helicopters) will be seen by enemy side-looking airborne radar (SLAR). Electronic emissions will, in many cases, duplicate high-value targets such as command or fire-direction assets. Infrared and imagery signatures will be unmistakable to aerial satellite reconnaissance. Even smaller medical assets throughout the battlefield, because of the mission in which they are engaged, will emit signatures associated with valuable combat assets.

Failing to advertise medical assets as such may mistakenly invite an enemy fire mission that otherwise would have gone someplace else. The cluster or base commander who orders a medical facility camouflaged expecting to lower his risk may, in fact, be inviting an area fire mission (nuclear or chemical) that he would otherwise have escaped.

On the high-intensity battlefield or in the lower intensity conflict where the world is

watching, there are solid tactical and strategic reasons for observing the laws and customs of war as they pertain to medical operations.

Medical Intelligence and the Threat to Medical Forces

If a commander has intelligence as to the degree to which his medical forces will be respected by an opponent, then he can maximize his medical operations. If respect is likely, then facilities can be larger and farther forward. Air evacuation corridors can be established, radio frequencies designated and, possibly, sites selected and improved. The system can work to its potential.

On the other hand, if intelligence indicates a foe will not respect medical operations, then a different force structure may be chosen. Smaller units, capable of dispersal, can be deployed. Larger units can be echeloned in different locations and the increments augmented with special teams. Mobility can be stressed, with extra transportation assets deployed (the larger hospitals are typically only about 10-percent mobile). Evacuation assets that can operate in a hostile environment can be stressed. In short, the commander can tailor his medical system to the degree of the threat.

Such intelligence appears to be in its infancy. US Army Field Manual 8-10-8, *Medical Intelligence in a Theater of Operations*, July 1989, touches on the subject, apparently for the first time. Although threat intentions on any conceivable battlefield are a vital question, it is doubtful that quality analysis currently exists.

Studying the threat intentions of a given foe would involve an interdisciplinary approach. The historical conduct of the nation or its people in past conflicts would be studied, as would the perception the nation had (or has) regarding the legal basis of the conflicts (civil war, internal police action or open conflict) in which it had participated. International agreements for past conflicts as well as current ones would be studied. Threat force structure and equipment for both medical and nonmedical units would also be studied, as would its doctrine, particularly in the area of employing medical forces.

The nation's training materials in the area of medical operations and other laws of war are vital, for soldiers will fight as they have been trained. Similarly, the sophistication or, to be blunt, the degree of civilization the nation demonstrates is also a factor; perhaps the enemy soldiers lack the educational foundation to understand the concepts of international law. Open-source materials would be reviewed, as well as exploiting any available and pertinent intelligence sources.

All of this information would be screened by legal, medical and intelligence experts to form the most accurate picture possible of how the enemy might behave in battle. In short, an intelligence analysis of the issue would be presented to the commander before the conflict so he could enter the battle as well prepared as possible. This has not been the case in the past.

There is one central proposition for this article, and it is that US forces should prepare to fight future battles by the rules of the GWS. We must have doctrine and force structure that make such a goal possible, and our personnel must be trained to do so.

There is a perception that the American soldier, is a just person and that he instinctively knows right from wrong concerning the laws of war. This is dangerous, for the laws and customs of war are technical, and many of the answers fall someplace between the black and white of the written verse. A soldier, particularly a commander, who is unschooled in not only the letter of the law but also its intention and direction can make a mistake of either commission or omission. He may err by doing something wrong, or he may do less than he was entitled to do, missing a crucial opportunity or advantage.

What degree of expertise should the commander have? Any commander, without prompting or materials, should be able to teach or respond to all major points of the laws of war. True, the area is law, but it is the maneuver commander in the heat of battle and probably without a judge advocate present who will be making the hard decisions. A medical commander should further be an expert on the GWS, its his-

Improved intelligence centered on the threat to medical forces must be collected and made available to commanders. A commander cannot be expected to let down his guard unless he has good information that he will not be attacked. Intelligence products addressing enemy intentions toward medical forces will . . . prepare forces for those times when antagonists cannot be trusted.

tory and interpretation so that he can advise the maneuver commander. If these considerations could possibly have been ignored in the days of AirLand Battle, then they certainly cannot be in future battle where the *manner* in which medical operations are conducted will certainly affect the overall quality of medical care. Commanders must begin to think of the GWS as furthering medical operations, for that, in fact, is why the GWS was created in the first place.

Specifically, what can be done at this point? Medical units must be marked (as required by STANAGs) except in temporary circumstances and must be deployed separately from targetable military forces or objectives. The threat of unprotected isolation is far less for the MTF than the dangers associated with being integrated with purely military targets. If the MTFs are detached from organic support bases in the heavy divisions, then no intelligence on the location or order of battle of nonmedical assets will be given to the enemy. Additionally, if the MTFs are not targetable, they could be deployed much farther forward, greatly benefiting their mission. This separation from military targets has been the central rule of medical operations in past wars and, with good reason, is mandated by the GWS.²³

In terms of training, what is needed is an honest and forthright approach at integrating our present force structure and doctrine with the

laws of war, medical operations and STANAGs. If this is done in training, soldiers will learn to anticipate it being done in war, and the correct lessons will be taught. The realities of the battlefield must be admitted and not glossed over. Doctrinal publications must not dodge the difficult issues but must give firm and simple direction on when medical units will be camouflaged and defended, how they will be sited and the degree to which they will integrate with nonmedical units. Training and ARTEP tasks must present realistic situations that may occur in battle and require responses that will pass legal muster. If the dilemmas this creates are impossible to resolve and the system must be revamped, then better to have found that out now than once the battle is joined.

Improved intelligence centered on the threat to medical forces must be collected and made available to commanders. A commander cannot be expected to let down his guard unless he has good information that he will not be attacked. Intelligence products addressing enemy intentions toward medical forces will not only

encourage respect for the GWS but will also prepare forces for those times when antagonists cannot be trusted.

The issue is not one of morality or correctness, it is one of operations and mission. Laws of war exist to facilitate the conduct of warfare. Although publicly based on a foundation of morality and compassion, most laws of war do have a solid operational underpinning. The laws of war are not ivory tower dreams—they represent the actual combat experience of nations in past wars. They ensure that the commander's soldiers and his hard combat assets are strictly controlled and efficiently spent only on military objectives and only to the degree necessary. This husbanding of combat power assumes a new proportion in the future battle where we may have to fight and win outnumbered—and far from friendly supply points.

Similarly, the laws of war relating to medical operations exist to allow medical support on the battlefield. If adherence to these laws of war will further our military interest, then the advantage should be grasped, not declined. **MR**

NOTES

1. This convention, *Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field*, as well as the other Geneva conventions, is reproduced in full in Department of the Army (DA) Pamphlet 27-1 (December 1956) and is essentially reproduced in a different format in US DA Field Manual (FM) 27-10, *Law of Land Warfare* (Washington, DC: US Government Printing Office [GPO], July 1956).

2. FM 27-10, 7.

3. Army Regulation 310-34, *The Department of the Army Equipment Authorization and Usage Program* (Washington, DC: US GPO, 12 December 1986), par. 3-3(b)(5)(a) and (b), 21-22; FM 27-10, par. 223, 88.

4. FM 27-10, par. 223, 88.

5. The language "defend themselves and their patients" means that medics can defend themselves against treacherous attacks that do not respect their special status. That it does not mean "resist capture" is often misinterpreted. See, for example, US DA FM 100-10, *Combat Service Support*, 3-2 (Washington, DC: US GPO) which tasks medical units in the rear area with defending against enemy airborne and armoured forces.

6. Jean S. Piclet, ed., *The Geneva Conventions of 12 August 1949: Geneva Convention for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field*, 4 vols., (International Committee of the Red Cross in Geneva, 1952), 1:204 (hereafter cited as GWS). This work is of such international respect that it is viewed as an explanation of the convention itself.

7. GWS, 1:203.

8. AR 310-34, as previously cited.

9. GWS, 1:218 and 219.

10. US DA FM 90-14, *Rear Battle* (Washington, DC: US GPO, 10 June 1985), 3-18; GWS, 1:196.

11. US DA FM 63-2-2, *Combat Service Support Operations* (Washington, DC: US GPO, 29 October 1985), 1-8.

12. NATO Standardization Agreement (STANAG) 2831.

13. US DA AR 750-58 *Maintenance of Supplies and Equipment: Painting, Camouflage Painting, and Marking of Army Materiel* (Washington, DC: US GPO, 25 February 1976), par. 5(i).

14. NATO STANAG 2027.

15. Open-source references to Soviet medical doctrine and to specific organizational and personnel data are found in US DA FM 100-2-3, *Soviet Army Organization and Equipment* (16 July 1984). The remaining discussion on the Soviet table of organization and equipment is from this FM. See also Defense Intelligence Report DDB 1150-18-79, *Medical Support of Soviet Ground Forces* (March 1979). A classified version of the latter is also available as DST 18105-82-81.

16. GWS, Article 46.

17. The equipment tables in FM 100-2-3 show no inappropriate weapons in medical units.

18. GWS, 1:320.

19. Ibid., Article 12.

20. FM 90-14, as previously cited.

21. See GR 43-210-100 027, *Health Service Support Army Divisions*, 44 and 45. Despite the admonition to always obey the GWS, specific advice violating the GWS presents a disservice to the soldier who deserves honest direction on how he will conduct himself in battle.

22. For example, Army Training and Evaluation Program 8-25 for nondivision medical clearing companies presents Task 18-19, *Employ Physical Security Situation*: Friendly or enemy personnel attempt to obtain nonviolent entrance to unit area. Proper responses: 1. proper challenge procedures; 2. only friendly personnel admitted; 3. all enemy personnel are killed, captured or dispersed. The last response is clearly a violation of the medical unit's obligation not to fire upon enemy troops acting in conformity with the laws of war (emphasis added).

23. GWS, Article 19.

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The Officer Corps

Unduly Distant From Military Justice?

Lieutenant Colonel William Hagan, US Army

It is every responsible leader's goal to promote an atmosphere of justice and equity in military units. The military justice system has long been an essential tool to this end. The author contends that changes in the military system over the last two decades have removed officers from their former central role. He calls for commanders and judge advocates to work together to reemphasize the values fostered by the military justice system in today's and future generations' officers.

UNTIL recently, a judge advocate meeting a senior officer knew that talk would soon turn to the older officer's military justice experiences. Senior leaders enjoyed telling of their prowess as defense or trial counsels when they were lieutenants. According to their memories at least, these officers never lost a case as defense counsel, so the court-martial convening authority soon detailed them as trial counsel. Predictably, they did not meet their match in that role either. Those stories are disappearing. The memories are not fading; there are simply fewer officers remaining on active duty with the experiences to tell the tales.

There will soon be few line colonels who have defended soldiers at courts-martial. That any ever did surprises many young officers. And, because of the change that authorized trial by military judge alone, many senior officers have far less frequently sat as court members. We should consider whether the new legal system has affected our sense of justice. If so, the consequences go beyond fewer courtroom war stories.

The Early Days

Military justice existed for centuries solely to ensure military discipline. Early commanders achieved subordination through tempered terror. Justice may have been important, but disci-

pline was critical. As royalist and parliamentary commanders learned, "Armies without military subordination and discipline were like bodies without souls, and these were only to be acquired by instilling martial law amongst them."¹ Americans have long believed that those souls deserved justice too. What passed for justice may seem harsh to late 20th-century sensitivities, but that system passed legal and moral muster in its time.

The United States adopted, virtually unchanged, the articles of war that had governed the British army. From 1775 until the evolution of the articles of war into the modern Uniform Code of Military Justice (UCMJ), the Army officer played a central role.² Whether as accuser, witness, court member, defense counsel or judge advocate, officers spent considerable time performing legal duties. Military justice was like horsemanship—every competent officer understood the principles, and most could perform adequately.

Any summary of almost 200 years is quite general, but continuous themes run through military justice. For most of our history, a court-martial consisted of the president and members who determined guilt or innocence and the judge advocate. Except for the few legally trained judge advocates, lawyers (especially defense lawyers)

had no place in military justice for many years. General William T. Sherman, a soldier and lawyer, spoke for many when he said:

"It will be a grave error if, by negligence, we permit military law to become emasculated by allowing lawyers to inject into it principles

Whether as accuser, witness, court member, defense counsel or judge advocate, officers spent considerable time performing legal duties. Military justice was like horsemanship—every competent officer understood the principles, and most could perform adequately. . . . Until about 20 years ago, line officers prosecuted and defended all but the most serious cases.

derived from their practice in the civil courts, which belong to a totally different system of jurisprudence."³

From those first days until about 20 years ago, line officers prosecuted and defended all but the most serious cases. Lawyers usually served as judge advocates only at general courts-martial. In most cases, one line officer was the judge advocate and thus prosecutor, adviser to the court and court reporter.⁴

Throughout most of this period, new lieutenants could expect early detail as defense counsel. Fledgling counsels mastered valuable lessons that are, unfortunately, overlooked today. An especially critical lesson was that young officers learned that, in our system of justice, the burden is on the government to prove the defendant guilty beyond a reasonable doubt. Line officers who practiced law as part of the military art learned that the Army must prove the guilt of every element of the charged offense to a moral certainty and also learned what that meant.

Officers labored in the courtroom in another critical role. Until 1969, all special and general courts-martial were heard by members. The military judge did not yet exist; the president

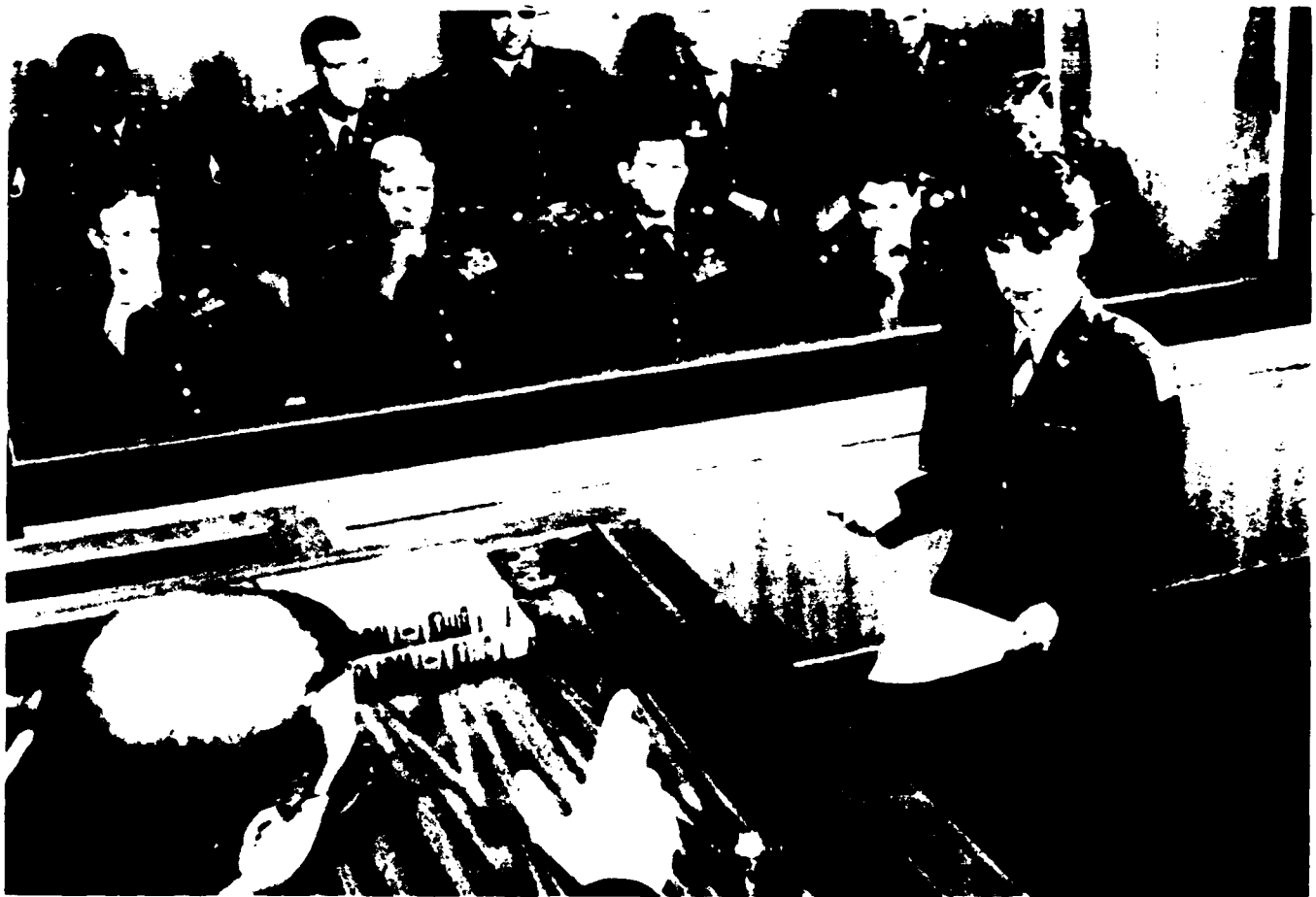
presided at a special court-martial and, even after 1950, had significant duties at a general court-martial. Few officers today could discharge the old court-martial president duties, and they do not need to do so. Yet, only two decades ago, most officers had well-thumbed manuals for courts-martial and were experienced in law. The point is not that greater opportunities to judge made yesterday's officers better than today's, but rather, that fewer opportunities may make today's officers less able to apply justice and to understand what justice really is.

Judicialization

We now have a system which is less like the earlier articles of war than it is like the procedural and substantive criminal law of the federal and state courts. The UCMJ is a modern penal code that sets forth crimes, penalties and procedures. In fact, only three basic differences remain between military criminal law and federal or state criminal law: trial by jury of peers, bail and indictment by grand jury. Sherman notwithstanding, everything else is quite similar to any other American criminal code. Even a health and welfare inspection has civilian counterparts.⁵

Changes to military justice by legislation, executive order or case law have been occasionally gradual, but often traumatic. This process has been called *judicialization* or *civilianization*.⁶ The very words make etymologists and old soldiers wince. They do, however, label accurately how military law has evolved from a distinctly separate system to one closer to the civil. Differences exist; nevertheless, civilian trial lawyers who are comfortable in federal criminal trials do well at courts-martial. Military trial procedure would be familiar even to new lawyers. Federal appellate practice and that of the military appellate courts are also very similar.⁷

But in the Army today, the typical officer of every grade knows much less about military law than did the officer of just two decades ago. The reason? Officers have a far less active role in the military justice system. The UCMJ began that process, but the Military Justice Act of 1968 transformed the officer from frequent participant



The Military Justice Act of 1968 transformed the officer from frequent participant to occasional party. By law, regulation or practice, judge advocates (now all lawyers) prosecute or defend the accused at courts-martial. By law or regulation, only full-time military judges (now all lawyers) preside at trials. The president of a modern court-martial has a title but a small role.

to occasional party.⁸ By law, regulation or practice, judge advocates (now all lawyers) prosecute or defend the accused at courts-martial. By law or regulation, only full-time military judges (now all lawyers) preside at trials. The president of a modern court-martial has a title but a small role. Trial by military judge alone is the rule, not the exception. Therefore, there are far fewer opportunities for officers to participate in the criminal justice process by determining guilt, innocence and sentence.⁹ Finally, and very important, by regulation and practice, administrative separations remove troublemakers and potential troublemakers without trials.¹⁰

Officers Today in Military Justice

When young officers gather facts, inspect or search rooms and other places for contraband or evidence and seize persons or property, they are

really police officers. The initial inquiry of Rule for Courts-Martial 303, whereby the commander investigates a report of misconduct, is a prosecutory to quasi-judicial function in which enough evidence is gathered to determine what action should be taken. Forwarding charges with recommendations can be little more than a formality; those documents are often preprinted forms or products of the prosecutor's word processor. Even the bottom line—the commander's recommendation—is, especially at company level, sometimes more the reflection of the prosecutor's view than that of the commander. The trial counsel is driven by other forces too. Caseload, processing time of courts-martial and similar concerns can skew the prosecutor's advice. Those concerns are legitimate, but thoughtful commanders weigh them without being bound by them.

Some functions directly involve officers with applying justice. The most common encounter is with nonjudicial punishment. Administrative Article 15 proceedings are just, if understood and administered fairly. That is important because, for good or bad, officers and soldiers probably learn and decide more about military justice through imposing or receiving nonjudicial punishment than from anything else.

Officers have other opportunities to judge. These include occasional duty as an Article 32, UCMJ investigating officer; determining whether probable cause exists when asked to authorize a search; serving as a summary court-martial authority; being the defense representative at a summary court-martial; investigating an Article 139, UCMJ claim; and acting as administrative board recorder or member.¹¹ These means are not insubstantial, but these and others existed in greater measure in the past. The trouble with all of this is that occasional lessons in any subject, including justice, seldom linger.

The Problem

To note differences between military justice today and yesterday does only that. Today's officers should ask whether, for all of their positive reforms, these changes have also wrought harm. Are line officers poorer court members, convening authorities and, perhaps, even poorer commanders for their fewer and lesser experiences in administering military justice? The answers are not likely to be found by surveys and may not be discoverable at all, but the issues are important and should not be ignored. I submit that the unfortunate answer to each of these questions is yes. Even if you disagree, any response other than a resounding no should be disquieting.

We are less aware today of what military justice is and, accordingly, often overlook our duty to see true justice done. Nothing is wrong and much is right about convicting criminals and separating bad soldiers. But now we do that without being frequently reminded, as we were in the past, that sound reasons undergird the adversarial process. In civilian and military courts, the adversarial system is how we determine guilt

and innocence, place the burden upon the government, prohibit wrongful searches and involuntary self-incrimination, and secure many of the other safeguards that permit us to punish the guilty but protect the innocent. We are not reminded of that today because officers have fewer significant opportunities to balance law enforcement zeal with responsibilities for seeing justice done or to defend a soldier from government accusations.¹²

Apart from military justice, larger reasons compel us to decry the fewer opportunities for officers to participate in an adversarial system. Fairness is an undeniable essence of command. The ability to judge and to be just does not come with an officer's commission; it comes from judging. That skill is still attainable under present conditions. For example, the officer conducting a report of survey or line-of-duty investigation sifts evidence and finds fact. However, we have given up many better ways and are worse for it.

Colonel Frederick Bernays Wiener, one of this century's great military legal scholars, foresaw the problem in 1962:

"Instead of the services disciplining themselves and taking a precise interest in seeing that the guilty are convicted and the innocent go free, the whole thing is turned over to the cops and the lawyers, and when a decision comes down saying that this or that is unfair, nobody sees that because this is in a verbose opinion which only lawyers need bother with. *It is no longer a part of the consciousness of the service* [emphasis added]."¹³

Solutions

It is unnecessary to drastically change our military legal system. As Judge Walter T. Cox III of the US Court of Military Appeals (USCMA) puts it, "[T]he *grand strategy* is sound."¹⁴ While we should fret over officers becoming more remote from military justice, we may relax knowing that most other aspects of our system work very well. Military law is complex as is much else in military and civilian life. Clausewitzian axioms may be found in military law, but we cannot return simpler legal ways to the Army anymore

than we can bring back the horse cavalry.

In discarding obsolete rules, however, we need not throw out old values. They are at the heart of justice. The emphasis on values over the past several years has had a salutary effect upon the Army. Courage, competence, commitment and candor have as much to do with military justice as with training, readiness and war. Of course, parroting those words does nothing; they must be applied. And, happily, we have direct ways to improve officer involvement.

Begin at the beginning. Improve and increase existing military justice instruction in precommissioning programs and sustaining courses for all officers, including in the Reserve Components. Courses of law in Reserve Officer Training Corps (ROTC) programs and at Officer Candidate Schools (OCS), as comprehensive as that required of cadets at the US Military Academy at West Point, may be impracticable but should be considered. After all, should not officers sworn to support and defend the Constitution know something about it?

OCS, officer basic and advanced courses and the US Army Command and General Staff College have several hours of military justice training taught by judge advocates. The Judge Advocate General's School at Charlottesville, Virginia, has had great success with the Senior Officer Legal Orientation (SOLO) Course, and the US Army War College enjoys equal gain with its regular law course. Both nicely balance specifics about recurring legal issues and healthy exchanges of views by experienced officers. SOLO and War College attendees are selected and, by definition, are select leaders; most officers get only basic fare.

Yet, even courses that teach law well do not necessarily teach justice well. That probably requires learning in life's classroom. We should spend less time at Army schools learning particulars of military justice and more time on military jurisprudence such as the philosophy of military law.¹⁵ The Manual for Courts-Martial (MCM) and US Army Regulation 27-10, *Legal Services: Military Justice*, are filled with details, and judge advocates are paid to advise com-

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manders about specifics on *how* they are implemented.¹⁶ But what Army officers need—although they may vigorously deny it—is better grounding in the *why* of military justice.

Perhaps even that teaching tool of old Army classrooms and today's law schools, the mock trial, could serve us well again. We could use simulated courts-martial at Army schools, not to teach the specific duties of trial and defense counsel but as venues for values. Imaginative but realistic and compelling cases, enacted by students or on videotape, might accomplish several goals. New officers would be exposed to the purpose and uses of military justice and, simultaneously, become acquainted with other principles. These lessons could include ethics, the law of war and standards of conduct.

Education, even if reinforced, is not the only answer. By exercising their present authority more effectively, commanders may learn how better to apply justice. In civilian communities, the senior law enforcement official is the district attorney. In the military, that role is shared by commanders and judge advocates. But the latter's role is to advise and the former's to decide. Experienced commanders do not let trial counsel or staff judge advocates usurp that authority. Those same wise commanders seldom ignore their lawyer's advice. Lawyers give commanders

options; commanders select. The best commanders press judge advocates for options and recommendations on courses of action as they

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would any staff officer. That is also a new and important professional lesson for young judge advocates.

It is sad—and, worse still, our own doing—that we cannot use what otherwise might be the best solution. The good word “mentoring” has been overworked lately, but mentoring in military justice is sorely needed. Young officers have so few opportunities to learn directly what justice is that our experiences and opinions are especially meaningful. We should have a professional climate that would let us discuss military law as we do tactics, leadership and logistics. And, as in those fields, what seniors and juniors would hear about military justice would please, annoy or even shock all listeners. Good. The last places we need yes men are on battlefields and in courtrooms.

Nevertheless, we cannot safely share our views and encourage younger officers to give us their opinions. Influence is supposed to be what command is all about. Yet we must be wary of exchanging views of military justice with our subordinates.¹⁷ It would be deadly heresy to expect young leaders to form, alone, reasoned views of any other military subject. Encouraging discussion between seniors and juniors about military justice is viewed in legal circles as equally heretical. The far fewer opportunities for learning that result diminish justice in military justice. We

must preserve soldiers' rights to a fair trial without letting caution unduly outweigh our legitimate interest in professional growth that can make the system more fair.

There is a ready way to avoid the risks of unlawful command influence and yet tap the knowledge of senior officers experienced in military law. Ask the military judge to speak at a battalion officer professional development seminar or at similar forums. The military judge is one of the most overlooked resources on any installation. These officers have unique perspectives on military justice and are willing, or should be, to share their ideas. Military judges are lieutenant colonels or colonels of the Judge Advocate General's Corps who, by virtue of their prior experience as judge advocates and their present sole duties as military judges, have considerable experience in courtrooms. The comments of an impartial observer of the whole picture would be welcome, novel and enriching. Many military judges might be better for this exchange of views too!

Other ways may also serve. Do not shrink from duty as a member of a court-martial; inconvenience is a small price for learning and justice. Insist upon having a voice in the convening authority's decision on whether to approve a defense offer for pretrial agreement.

Read and write. Legal material is often crucial to official duties. No senior officer should hesitate to read important cases and to discuss them in broad theory with the staff judge advocate. Submit thoughtful articles about military justice to professional journals. That should not be the sole province of judge advocates unless you want military justice to be theirs alone too.

Agree with the staff judge advocate that lieutenants assist trial counsel at courts-martial. Young line officers would learn well and much about how *their* system works. In return, have new judge advocates spend a week or so in your unit. They will learn about their clients—commanders, soldiers and our great Army families. The best aspect of this is that it is entirely in your hands. Make it as simple or involved as you and the staff judge advocate want. Some staff judge

advocates and trial counsel may consider educating lay lieutenants a burden. If the staff judge advocate is not interested, ask the senior defense counsel. Either you believe that exposing line officers to the military legal system has substantial worth that outweighs these and other costs or you do not. I do.

The president of the HMS *Bounty* court-martial said to Captain William Bligh: "We cannot send justice down to our ships at sea in books; it must be in the hearts of our captains."¹⁸ We have that same need in our Army today. Yet, almost without our noticing it, changes in military law have made it more difficult to inculcate military judicial values in young officers.

Modern officers are involved in military justice less as judicial officers and more as law enforcement officers or as functionaries in its administration than has been true through most of our Army's history. To say that police officers and bureaucrats are not interested in justice is unfair, but they are not the best judges of guilt or innocence. More critical, those duties do not instill that sense of justice that is so important to have later in a military career when acting as a convening authority or even as an architect of change for the entire system as some may be.

Even with fewer opportunities for meaningful experiences and diminished influence by seniors in military justice, there are ways to retain our system and make it work. And the system is worth keeping. The civilian legal profession, the public and, most important, soldiers generally view the system as fair. Rabid attacks that once were common are rare. Courts-martial are, and are seen as, impartial and just tribunals. That high regard flows from the UCMJ and its amendments over the years, the USCMA, the MCM and the day-to-day administration of military justice by Army lawyers and others who have full-time or occasional roles. Our system's worth is flawed by the diminished role of officers, but it may be readily remedied. We should live our values so that we are worthy of emulation, refocus the scope of instruction in our schools from legalistic details to legal philosophies, and increase the kind and quality of experi-



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ences with military justice in the field.

Judicialization is not a malady of military justice, but that process has brought some ills. The cure lies not with lawyers but with Army leaders at every level who recognize that the UCMJ is a system of values. In law as in battle, "The lives and destinies of valiant Americans are entrusted to your care and leadership."¹⁹

Operation *Desert Shield* has taught many lessons, and some, as of this postscript, no doubt remain to be learned. Thus far, military justice actions have been very low compared with our normal rates. The obvious and generally correct explanation is the no-alcohol policy. But that is not the only answer. Among the reasons are the high-quality force and the focus on mission. Reserve Component units usually have older soldiers, and the resulting maturity may also

have had an effect. In addition, leaders seem to have "ratcheted down" in their disposition decisions. In other words, what may have led to non-judicial punishment or even court-martial in garrison has been overlooked or handled administratively in the difficult conditions of training and living in the Saudi desert. Whatever the explanations, the happy result is that everyone can concentrate on other critical tasks.

If we must fight, the way we administer military justice in combat may need to be studied. So far, the low indiscipline rate has posed no "warstoppers" and probably never would. If, however, that rate increases markedly, with or without combat, we may find, for example, that getting counsel, military judges and witnesses to court may just be too hard to do.

We may also confront again the woes we faced in late 1945 and 1946, as we tried to demobilize

rapidly after World War II. The numbers may be fewer, but the pressures will be greater and more vocal.

The recent Senate report on certain activities within the Judge Advocate General's Corps, especially regarding unlawful command influence, is evidence of a senior commander imposing, not sharing, his views. In a hierarchical system as we need and have, occasional autocrats at the top (even well-meaning ones) will frighten those below into silence. No staff judge advocate can stuff the genie of unlawful command influence back into the bottle after the commander releases it by inappropriate comments. Loose lips sink more than ships. Few generals get into trouble when they talk with their lawyer before they talk publicly about military justice. That is all, of course, more a lesson in leadership than law. **MR**

NOTES

1. Stephen Payne Adye, *Treatise on Martial Law* (London, 1810), 15.
2. *Uniform Code of Military Justice (UCMJ)*, 10 USC (Title 10 US Code) Sections 801-940 (1982).

3. William T. Sherman, "Military Law," *Journal of the Military Service Institution of the United States*, vol. 1, (1880):130.

4. William Winthrop, *Military Law and Precedents* (Washington, DC: Government Printing Office [GPO], 1920), 179-204.

5. There are any number of examples, but perhaps the most common is restaurant inspections by public health officials.

6. Professor Delmar Karlen, "Civilianization of Military Justice: Good or Bad," *Military Law Review*, vol. 60, (Spring 1973):113; Colonel Frederick Bernays Wiener, AUS, Retired, "Advocacy at Military Law: The Lawyer's Reason and the Soldier's Faith," *Military Law Review*, vol. 80, (Spring 1978):1 and 14; Captain John S. Cooke, "The United States Court of Military Appeals, 1975-1977: Judicializing the Military Justice System," *Military Law Review*, vol. 76, (Spring 1977):43; William C. Westmoreland and George S. Prugh, "Judges in Command: The Judicialized Uniform Code of Military Justice in Combat," *Harvard Journal of Law and Public Policy*, vol. 3, (1980):1-8 and 40-52; and The Honorable Walter T. Cox III, "The Army, the Courts, and the Constitution: The Evolution of Military Justice," *Military Law Review*, vol. 118, (Fall 1987):1.

7. The US Court of Military Appeals (USCMA) is, significantly, not the US military court of appeals. It is not a military court; it is a federal court that hears military cases. USCMA is a three-judge court composed of distinguished civilian lawyers appointed by the president for 15-year terms.

8. The Military Justice Act of 1968, Public Law 90-632, 82 STAT 1335 (82 Statutes at Large 1335). I criticize only one unforeseen aspect of the Military Justice Act of 1968. On balance, that legislation has proved to be a remarkably fine addition to the military criminal legal system. The list of improvements is long, but the creation of an independent trial judiciary illustrates the significant and generally positive impact of the 1968 changes.

9. In Fiscal Year 1990, "judge alone" trials accounted for 69 percent of the 1,451 general courts-martial, 70 percent of the 771 special courts-martial empowered to adjudicate a bad conduct discharge and 57 percent of the 149 special courts-martial. Draft of the "Clerk of Court Notes," to be published in *Army Law-*

yer (1991 edition).

10. US Army Regulation 635-200, *Personnel Separations, Enlisted Personnel* (Washington, DC: GPO, 5 July 1984).

11. The 25th Infantry Division (Light) appoints lieutenants to represent accused at summary courts-martial. Normally, the Trial Defense Service does not detail defense counsel to summary courts, but it briefs the defense representative. Inasmuch as there are few summary courts-martial convened during a year, this duty is a useful albeit limited experience.

12. We overlook history at our peril, but the past is not a panacea. Our forebears had their problems. "Talking of a Court-martial that was sitting upon a very momentous public occasion, [Samuel Johnson] expressed much doubt of an enlightened decision; and said, that perhaps there was not a member of it, who in the course of his entire life, had ever spent an hour by himself in balancing probabilities." See *Boswell's Life of Samuel Johnson*, ed. Edmund Fuller, (New York: Laurel, 1960), 294. Let that not be said of us.

13. Testimony before US Senate Subcommittee, Hearings on "Constitutional Rights of Military Personnel," (1962), 780.

14. Cox III, "The Army, the Courts," *Military Law Review*:1 and 30.

15. The method also deserves thought inasmuch as we have found it necessary to use a comic book to teach supply management to young officers! US Department of the Army Pamphlet 710-5, *Unit Commander's Supply Handbook* (Washington, DC: GPO, April 1987).

16. *The Manual for Courts-Martial, United States, 1984*; and US Army Regulation 27-10, *Legal Services: Military Justice* (Washington, DC: GPO, 5 July 1984).

17. Captain Vito A. Clementi, "Unlawful Command Influence: What Commanders Need to Know," *Military Review* (April 1988):66.

18. At least in one of the movie versions of that famous mutiny and trial.

19. Those words are inscribed upon the base of the statue dedicated *To the American Soldier* but were intended for the eyes and souls of cadets at the US Military Academy (USMA) at West Point, New York. The statue was the gift of the USMA classes of 1935 and 1936, whose chiseled sentiments are evidence that they have a sense of justice.

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CSS Units and Rear Area Protection



Captain Stephen C. Danckert, US Army

Securing and protecting combat service support (CSS) elements in the rear areas remain a critical part of the challenge of sustaining combat operations in the AirLand Battle. The author finds that CSS doctrine, equipment and training are inadequate to the task and offers several recommendations for improving rear area protection.

"A FOOLISH consistency," Ralph Waldo Emerson once said, "is the hobgoblin of little minds." Despite tremendous strides in rear operations doctrine and procedures over the last decade, most combat service support (CSS) units remain mired in flatly unworkable doctrine. CSS commanders still entrust their units' defense to neat little "goose egg" perimeters, hardened machinegun bunkers and letter-perfect range cards.

It is time we put an end to this sham. Neatly drawn platoon battle positions may impress the operations officer, but they will not keep a CSS unit in the fight. CSS units cannot man a perimeter and still perform their mission, and it is highly unlikely that CSS soldiers could get to their fighting positions in time to prevent an enemy penetration. Moreover, all CSS units boast a

large number of "soft" targets—computer vans, repair shelters, fuel tankers, and so forth. A perimeter small enough to permit interlocking fires will be small enough for the enemy to engage these targets without ever having to penetrate the perimeter. Finally, even the tightest perimeter would require CSS soldiers to dash 100 to 200 meters to find shelter from an air or artillery strike.¹

What we need is a new approach to base defense, a new paradigm, if you will, of rear area protection. If base defense is the linchpin of all rear operations, then it is with the base that we must begin.² Our solution must be the so-called strongpoint defense.³

The strongpoint defense was pioneered by the Wehrmacht in the closing days of World War II. Bundeswehr CSS units continue to apply it, and

many an American officer has driven right through a *Bundeswehr* CSS unit on REFORGER without ever realizing it.⁴

The key elements of the strongpoint defense are dispersion, hardened point defenses and mobile reaction forces. Each of these elements contributes to detecting, delaying and destroying enemy ground forces operating in the rear area.

Under the strongpoint concept, a CSS company base may organize itself into two or more strongpoints. Making maximum use of available

The strongpoint defense was pioneered by the Wehrmacht in the closing days of World War II. Bundeswehr CSS units continue to apply it, and many an American officer has driven right through a Bundeswehr CSS unit on REFORGER without ever realizing it. The key elements of the strongpoint defense are dispersion, hardened point defenses and mobile reaction forces. . . . Making maximum use of available camouflage—a village or town is ideal. . . .

camouflage—a village or town is ideal—the commander conceals each of these strongpoints as best he can. Trucks and generators are hidden inside buildings, fighting positions are placed in windows and through rooftops, and strongpoints are placed several hundred meters apart from each other.

Dispersing the strongpoints is critical. This makes it harder for the enemy to detect the unit in the first place, regardless of the surveillance measure employed. Against air or artillery attack, a dispersed unit presents a poor target. Against a ground attack, dispersed strongpoints become what one expert has described as a veritable area ambush.⁵

Generally, platoon or section work areas will be organized into strongpoints. Terrain may dictate that strongpoints be smaller than the work

areas they protect. When this occurs, the commander must identify critical systems to be located within the strongpoint's defenses and to be protected at all costs. Less critical systems can be left in place, pending arrival of the reaction force.

The fighting position within each strongpoint must provide protection against ground, air, artillery and NBC (nuclear, biological and chemical) attack. Constructing serviceable fighting positions is almost a lost art in CSS units—bracing, overhead cover and firing ports are almost always inadequate. CSS units must be provided with sufficient light engineer equipment on their MTOE (modification table of organization and equipment) to permit rapid construction of hardened fighting positions. The Chemical Corps must develop an appropriate chemical-resistant liner to reduce the contact hazard presented by leaking overhead cover. Finally, CSS commanders must have both the courage and the technical expertise to tell dog-tired soldiers that their fighting positions just will not do the job. We do our soldiers no favor when we praise them for neatly laid-out foxholes that will not survive the first grenade.⁶

When all is said and done, however, neither dispersion nor hardened fighting positions will stop an enemy ground attack. As important as these two factors are, only a well-trained, highly mobile reaction force can take the fight to the enemy. Only the reaction force can eliminate the ground threat. The reaction force must be organized, trained and employed in accordance with five principles: firepower, mobility, unity, security and economy of force.⁷

The first principle, firepower, is also the most important. Reaction forces must be able to overwhelm the enemy. Today, most CSS commanders continue to place most of their high-firepower systems on the perimeter. Even with the introduction of the strongpoint defense, keeping high-firepower systems in static fighting positions will do little to defeat the enemy. Every soldier on the reaction force must be armed with a machinegun or a grenade launcher, and the force must be trained to employ this firepower



Members of an ordnance company reaction force practice jumping off their vehicle into a wedge formation. The team on call has a 1-minute reaction time and the backup team must respond within 5 minutes to any threat to the company perimeter.

No infantryman would dream of engaging enemy commandos with an ad hoc collection of available soldiers. Similarly, no CSS commander should imagine that he can defeat a ground attack merely by throwing soldiers at it. As much as possible, reaction force fire teams should be drawn from the same strongpoint or section area. This improves cohesion and decreases reaction time.

to deliver the maximum shock effect.

Reaction forces must be equipped with M203 grenade launchers and either M249 or M60 machineguns. M2HB .50-caliber machineguns and MK19 grenade launchers are too heavy for most CSS unit reaction forces. They are best employed in strongpoint fighting positions, especially those overwatching high-speed avenues of approach and potential drop zones or landing zones. The Army should procure hand-held automatic grenade launchers, either belt- or drum-fed, to further increase reaction force firepower.

The second principle, mobility, is a function of how rapidly the reaction force can deploy to where it is needed. This means the unit must have a sound early-warning system, as well as a means for disseminating the alert rapidly.

The reaction force must be trained to muster within 1 minute, and it must be equipped with commercial utility cargo vehicles (CUCVs) or high mobility multipurpose wheeled vehicles (HMMWVs) to enable it to move rapidly.

The third principle, unity, requires that reaction forces be permanently organized and trained in garrison. No infantryman would dream of engaging enemy commandos with an ad hoc collection of available soldiers. Similarly, no CSS commander should imagine that he can defeat a ground attack merely by throwing soldiers at it. As much as possible, reaction force fire teams should be drawn from the same strongpoint or section area. This improves cohesion and decreases reaction time.

The fourth principle, security, requires that the reaction force be fully trained for its mission.

Constructing serviceable fighting positions is almost a lost art in CSS units—bracing, overhead cover and firing ports are almost always inadequate. CSS units must be provided with sufficient light engineer equipment on their MTOE to permit rapid construction of hardened fighting positions. . . . CSS commanders must have both the courage and the technical expertise to tell dog-tired soldiers that their fighting positions just will not do the job.

This includes training in counterambush techniques because a reaction force moving between strongpoints is extremely vulnerable to ambush.

The final principle, economy of force, reminds commanders that the reaction force is a counter-attack force. It is not to be sent out after every sniper or in response to every spot report. Once strongpoints have engaged the enemy and he is being fixed by friendly fire, the reaction force may move in to flank and destroy him.

Because base clusters may take operational control of one squad from each base's reaction force, the Army must standardize reaction force organization and training. Either the Military

Police School, Fort McClellan, Alabama, or the Army Logistics Center, Fort Lee, Virginia, should establish a rear battle center to train the trainers, to promulgate doctrine, and to share techniques and lessons learned.

A rear battle center might be organized to conduct courses for rear tactical operations center personnel, reaction force leaders, military police and CSS leaders. It might also develop the rear battle portions of CSS unit Army Training and Evaluation Programs (ARTEPs), publish a professional journal, and serve as a clearing house for old lessons and new ideas. Most important, it could serve as the proponent for upgrading CSS units' rear battle capability with additional high-firepower weapons and could standardize rear battle doctrine down to base and base-cluster level. This would fill an operational gap so large now that it all but precludes effective rear operations after the first week of the war.

Change is never without pain, even when it is a change for the better. It will not be easy to shatter a mind-set forged in the Indian Wars and continued through to the base camps of Vietnam. It will not be easy to coordinate among the various CSS branches and to promulgate standardized organizations and procedures for rear area combat. But it is a challenge we must face. The continuity of support to the battle and the very lives of our soldiers depend on it. **MR**

NOTES

1. LTC Thomas A. Hooper, "Principles of War and Rear Area Protection: Have We Achieved Economy of Force?" (Fort Leavenworth, KS: School of Advanced Military Studies, USACGSC, 17 January 1988). This monograph is available from DLSIE (#LD 076072A). While the strongpoint defense has been with us for some time, (US Department of the Army Field Manual [FM] 9-59, *Unit Operations for Support of Missile and Air Defense Gun Systems*, (Washington, DC: US Government Printing Office [GPO], 16 September 1985), includes it in the chapter on ground defense). Hooper's study is by far the best thing yet written on base defense. This will become a standard reference for all future discussion of rear area combat.

2. US Department of the Army FM 90-14, *Rear Battle* (Washington, DC: GPO, 10 June 1985), 4-1.

3. Hooper, 32.

4. I can speak from personal experience on this point. During Exercise RE-FORGER 88, a Bundeswehr transportation unit was included in my base cluster. Although German rear battle doctrine differs significantly from US doctrine,

I went out to make a liaison visit in my capacity as base cluster operations officer. Aside from a few guards posted at various street intersections, the unit was almost completely concealed to the casual observer.

5. Hooper, 33.

6. As I finished this article, the morning news reported the death of a 26-year-old Desert Storm trooper whose bunker had collapsed on top of him.

7. CPT Stephen C. Danckert, "Principles of Reaction Force Operations," *Army Logistician* (March/April 1989):8-9. For tips on training the reaction force, see CPT Stephen C. Danckert, "Reaction Force Challenge," *Army Trainer* (Spring 1990).

8. CPT Stephen C. Danckert, "Detecting the Enemy: The Forgotten Element of Rear Operations," *Army Logistician* (March-April 1990):38-40. Detecting the enemy in the rear area remains a fundamental problem for combat service support commanders. The military intelligence community needs to address the shortfall.

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Corps and Division PASSAGE OPERATIONS

El Alamein, 1942



Lieutenant Colonel Thomas V. Morley, US Army

Fortunately for the coalition forces of Operation Desert Storm, the forward passage of combat formations went extremely well and, in many instances, unopposed. The author provides insights into the problems of a large passage operation and highlights the many pitfalls and costs of a poorly conceived and planned operation. The British experience at El Alamein provides many lessons for modern passage operations.

PASSAGE operations are an intricate part of almost every combat operation and can occur under any conditions of METT-T (mission, enemy, terrain, troops, and time available) imaginable. The passage of corps and divisions provides great challenges for the commanders and staffs involved. They must produce complex plans and closely supervise a complex, yet synchronized, execution. Historical examples of flawed or failed passage operations abound. This article uses a historical example to offer insights on the requirements for a successful plan and execution of a corps or division passage.

The North African El Alamein Campaign, fought from 23 October to 5 November 1942, was selected because its force structure—foot infantry divisions and armored divisions—closely

resembles the force mix of the US Army for the foreseeable future and can provide several lessons for modern-day operations. Future wars or contingency operations will be fought by mixtures of light and heavy forces up to the level of division or corps. During El Alamein, three separate passage operations of corps and divisions were executed. A discussion of the northern axis of the *Lightfoot* operation will provide adequate food for thought. The extensive minefield and treacherously soft desert sand created a very limited area that could be used as routes or lanes throughout the El Alamein vicinity. A limited number of routes is a significant factor in any contemporary passage operation.

The desert warfare in North Africa, prior to El Alamein, had been highly mobile, with sweep-

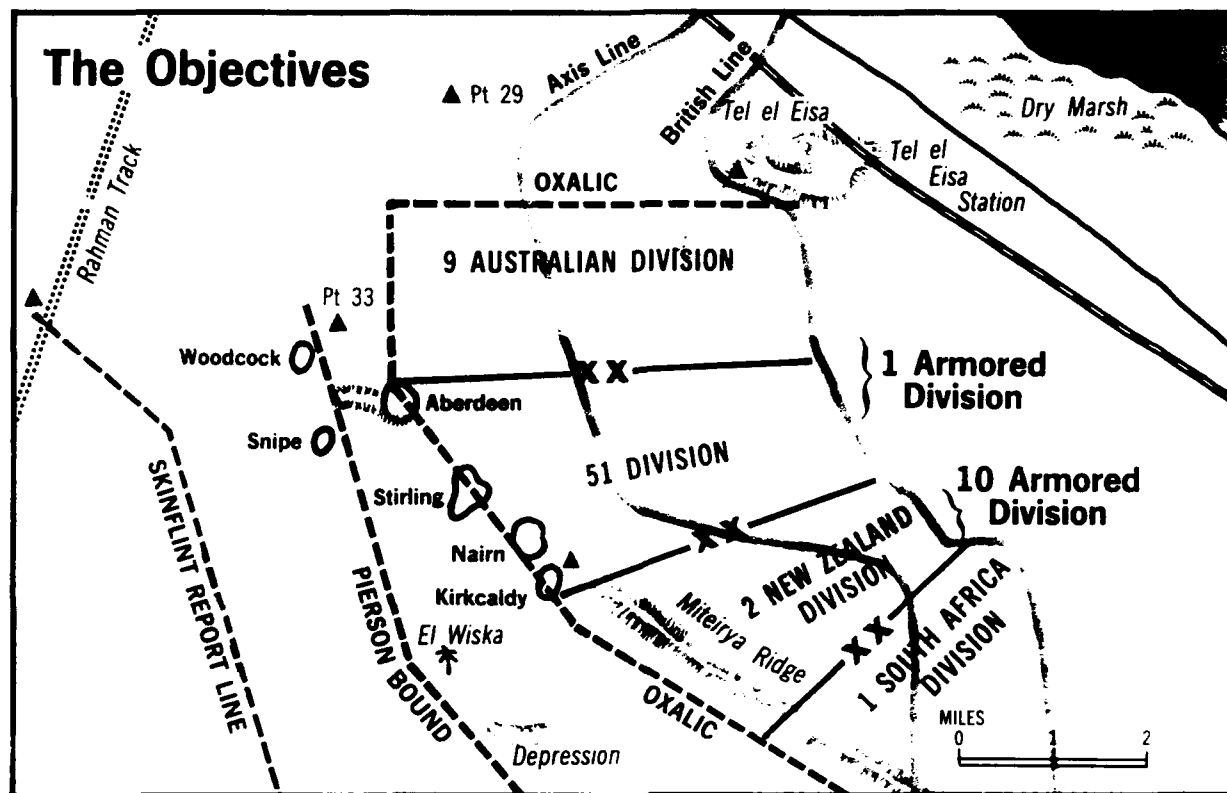
ing offensives from Egypt into Libya. As each offensive reached its culminating point, a counter-offensive was launched pushing both forces back to the initial starting points. By August 1942, the British army had been pushed back into defensive positions along the Egyptian border and awaited the inevitable attack. The German armor losses, from the unsuccessful Axis attack at Alam El Halfa, had destroyed General Erwin Rommel's offensive capabilities forcing him into a defense while awaiting resupplies and reinforcements from Europe. He established a strong

Rommel established a strong infantry defensive line with two large minefields—over 445,000 mines—laced with tank and antitank (AT) gun strongpoints. The depth of the defense was designed to reduce the effects of the expected massive British artillery strikes and to cause catastrophic casualties on the British infantry. The second defensive line would be strong enough to destroy the British mobile forces as they attempted to pass through the infantry's hard-earned gains. The depth of the defense would allow Rommel to identify the main attack early enough to concentrate his armored reserves for the decisive blow. German and Italian infantry units were intermingled to provide for a stronger overall defense. The infantry defenses were basically immobile, creating the need for immediate local counterattacks.

The British plan called for a main attack by two corps in the north, with a supporting corps attack to pin the enemy's mobile reserves on the southern axis. This operation, *Lightfoot*, would be executed on the night of 23 October, a night with sufficient moonlight to assist the infantry attack. In the north, 30 Corps, composed of four infantry divisions augmented with two armored brigades, would make the initial night attack to open two axes through the German defenses for the passage of the armored corps.

This phase, called the break-in, was to be completed early enough before dawn on the 24th to allow 10 Corps to get forward of 30 Corps' position and establish a defense to destroy German counterattacks. "30 Corps operations were to be designed to ensure that 10 Corps could pass through the gaps made in the minefields."¹ It was essential for the leading armored brigades of 10 Corps to be in their forward positions ready to fight at dawn without becoming





It was essential for the leading armored brigades of 10 Corps to be in their forward positions ready to fight at dawn without becoming embroiled in the fighting en route. . . . The [10 Corps] armored units had to aggressively move through [seven] restricted lanes and occupy positions forward of the infantry objective lines. The passage operations had to be executed almost flawlessly to get the large number of 10 and 30 corps' vehicles through the lanes overnight.

embroiled in the fighting en route. With his infantry divisions destroying the German defenses (the crumbling operation) while the tanks were destroying the German mobile forces, Montgomery believed that Rommel would be destroyed. "Whatever happened, the Panzer Army would be forced into committing the reserves at a time when its whole front line was under pressure, so that it would have to dance to Monty's tune."²

The 10 Corps, composed of the 1st Armored and 10th Armored divisions, was to pass through 30 Corps on two broad axes that incorporated six, later seven, lanes. The armored units had to aggressively move through these restricted lanes and occupy positions forward of the infantry objective lines. The passage operations had to be executed almost flawlessly to get the large num-

ber of 10 and 30 corps' vehicles through the lanes overnight. 30 Corps would be focused on getting to its final objective while bringing forward its essential support vehicles—AT guns, artillery and attached armor units. 10 Corps would be following in long columns on the seven lanes.

Eighth Army had assigned two linear objectives across the German defenses, roughly aligned to the perceived defensive belts. The primary mission of the infantry units was to reach these lines in accordance with the assigned time lines. Yet the Army plan did not specify the exact mission of the infantry units regarding the defensive strongpoints. In practice, the small numbers of infantry involved—less than 200 men in some battalions—restricted these units to merely reaching their objective lines. They lacked the strength to clear all enemy positions

The small numbers of infantry involved—less than 200 men in some battalions—restricted these units to merely reaching their objective lines. They lacked the strength to clear all enemy positions that could affect the lanes. . . . In fact, 30 Corps would only clear enough lanes to get its own supporting tanks and vehicles from the start line to the final objective.

that could affect the lanes. Also, the final objective line was more terrain- than force-oriented. The infantry units had no plans to move forward of the Oxalic line to destroy AT positions to facilitate the passage of the 10 Corps. In fact, 30 Corps would only clear enough lanes to get its own supporting tanks and vehicles from the start line to the final objective.

Execution

Despite Montgomery's optimism, the actual execution of *Lightfoot* was far from an easy task.

"Some of the most acute problems to be solved for a night attack to a great depth were to ensure that, despite casualties to key personnel the attack would be continued in the right direction, at the right pace and for the right distance, that information of progress would get back (not only to keep the formation and army commanders in the picture, but also to enable AT guns, tanks, ammunition and consolidation stores to be sent forward at the right time) and that vehicles and men to come forward later would get to the right place."³

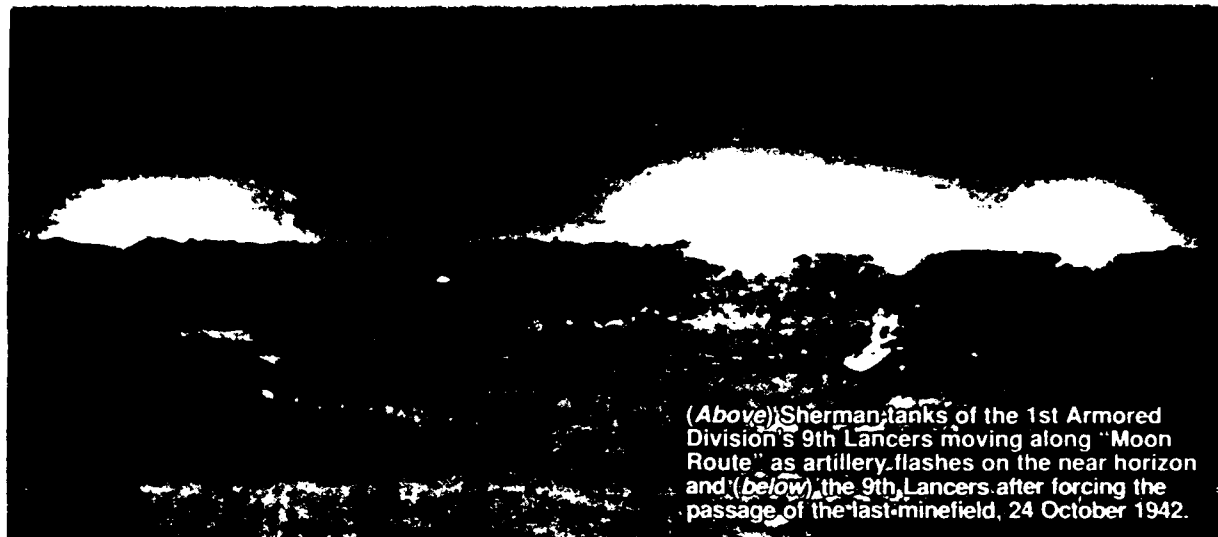
The 30 Corps infantry attacks had mixed results. Both Australian and New Zealand (NZ) attacks proceeded almost on schedule, with infantrymen arriving on their final objective line by about midnight. The 51st Highland Division and South African Division were not able to achieve their objectives by dawn. In all four divisions, the supporting vehicles and tanks experienced significant delays because of mine-clearing operations, bypassed enemy positions, poor navigation and unclear command and con-

trol procedures. This resulting backup of vehicles had dire effects on the 10 Corps' formations.

The 1st Armored Division (1st AD) began its move from its rearward assembly area about 1930, to be refueled along the Springbok road well behind the British minefields. This road march was slowed significantly by poor visibility, caused by excessive dust, and the resulting accidents. Yet by midnight, the lead elements of the 1st AD's minefield task force were passing through the British minefields. On one lane, the task force was held up at the first enemy minefield until 0400, even though the minefield had been gapped by 0100. Delays were caused by enemy fires and mines. "By this time the whole area was enveloped in dust, there were masses of vehicles all over the place and the marking of the routes and gaps was very hard to see."⁴ Elements of the 2d Armored Brigade did not reach the rear of the forward infantry elements until daylight. As they attempted to move forward, they were hit by effective AT fire and were unable to disperse because of a new minefield. After rapidly losing more than 10 tanks, they withdrew behind the friendly infantry defenses. The 1st AD units on the other two lanes were unable to link up with the attacking infantry division until several hours after dawn.

The 10th AD experienced similar delays and problems as it moved forward of the start line. It was unable to reach the infantry positions until well after dawn. (The NZ infantry had been there since 2300.) As one tank regiment attempted to push forward of these infantrymen, German AT fire, artillery and mines immediately destroyed 16 tanks.

By 0900 on 24 October, the 10 Corps attacks had been effectively stopped. The armored divisions were unable to get forward of the ridge and unable to get out of column into a combat formation to focus enough combat power to destroy the German defenses. The lack of a British combined arms capability made these German positions almost invulnerable to attack. Engineers could not survive forward of the ridge to clear enough lanes to mass the tanks for a charge forward. Massed artillery was unavailable, being



(Above) Sherman tanks of the 1st Armored Division's 9th Lancers moving along "Moon Route" as artillery flashes on the near horizon and (below) the 9th Lancers after forcing the passage of the last minefield, 24 October 1942.



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struck in the long columns as far back as the rear assembly areas.

The congestion in the lanes was so bad that 10th AD's second unit in the order of march, the 24th Armored brigade, had reached only the entrance to the first British minefield at dawn. The final combat element, the 133d Lorrain Infantry Brigade, was still in its initial rear assembly area. Division troops, artillery supporting both divisions, corps attachment tanks, and 10th AD support vehicles, and broken vehicles sat bumper to bumper in the clogged lanes. Most of 3d Corps' supporting AT guns, mortars, and machineguns failed to arrive in

time to be sited and dug in prior to daylight.

Daylight brought a universal desire to disperse to lessen the vulnerability to German air or artillery. This dispersal in the restricted lanes created absolute chaos. Casualties were produced as vehicles moved into uncleared minefields or bumped into bypassed German defenders. The 10th AD dispersal had to be superimposed upon the dispersal on the tail of the NZ division and, more crucially, across the lines of communication and supply along which the NZ administration services were frantically trying to get food, water, ammunition and reinforcements to the heroic companies holding the forward and

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most exposed positions reached by the main assault."⁵ Artillery units attempted to disperse to support the forward units, resulting in mine losses and confusion.

The forward combat area was just as clogged as the rearward routes. In the NZ sector, six NZ infantry battalions, two armored brigades and supporting vehicles were jammed along Miteirya Ridge.

"Dispersion as far as it was possible at all was a hazardous business. . . . The congestion was appalling and the confusion considerable. The whole area looked like a badly organized car park at an immense race meeting held in a dust bowl."⁶

Dust, smoke and artillery fire added to the control problems. Along Miteirya Ridge, the NZ infantry laid out barbed wire and stakes to simulate minefields to keep friendly tanks from overrunning their foxholes and positions.

Montgomery ordered a resumption of 10 Corps' attack the evening of 24 October to get his armored force through the Axis defense. However, this attack also failed. The armored units were unable to get enough combat power deployed forward to break through these defenses. Montgomery was forced to halt this failed operation and focus his efforts elsewhere.

Battle Summary

Lightfoot failed for a variety of reasons, the most significant being the failure of the passage operation. The British forces were never able to master the activities required to clear the dispersal area at the end of the congested lanes out to

direct-fire distances. This required a combined arms team that was highly proficient in the complex task of infantry armor teamwork. The reliance on a charge by tanks in columns at dug-in AT guns was a catastrophic error. It was identified as impossible prior to the battle by the armor commanders. Yet, they still tried to bull their way through these AT positions at a terrible cost. In the lanes forward of the infantry positions and at their exit points, the British tanks were outnumbered and outgunned.

The intermingling of six divisions and two corps created an immense control problem that was never really resolved on the battlefield. As one historian claimed:

"The real cause of the breakdown lay in Montgomery's own plan, whereby three armored divisions were asked to debouch in the face of anti-tank guns from nine cleared lanes, each only the width of a single tank through the German minefields and whereby the armored corps was superimposed in the same sector as the infantry corps which was to win the initial bridgeheads."⁷

"With two different corps who were not on the best of terms anyway both trying to carry out the same task in the same area, it was chaotic."⁸

Montgomery had seriously underestimated both the difficulty of the passage operation and the time required. "The essence of the operation was the mass breakout of the armor, formed up, organized and under unified control on the ground beyond the infantry's objective. It is doubtful whether by the employment and in the conditions met that this could have been achieved in the hours of darkness available."⁹ The draft 30 Corps after-action report, dated 25 November 1942, claimed that ". . . an outstanding lesson of these operations is that the depth and frontage of the advance ordered for the night of 23/24 October and in one or two other instances was in fact too great against the opposition to be expected."¹⁰

Lessons

There are some essential aspects of the passage of corps or divisions that can be gleaned from the battle at El Alamein.

Grant tanks of the 10th Armored Division burning in front of El Wiska at dawn on 25 October 1942, and (bottom) the 10th's Grants and Shermans near Miteirya Ridge on the previous afternoon.

Funnel Effect. As Montgomery discovered, a passing unit must have a safe area after exiting the constrained lanes to mass forces from the single vehicle bumper-to-bumper columns into attack formations. This safe dispersal area and the exit points must be secured from enemy direct-fire systems. Someone must move forward of the exit points to sweep the direct-fire area of enemy strongpoints. It will be impossible to safeguard this area from observed indirect fire, but the task of direct-fire security is possible.

This forward attack can either be the responsibility of the stationary or passing units. The assignment of control measures such as exit points, lanes and assembly areas beyond the exit points must be predicated on both enemy and terrain considerations. At Alamein, the final infantry objective line was actually short of a minefield and enemy defenses. The passing units were stuck in the column in the neck of the funnel and were destroyed piecemeal before getting to a wider dispersal area. No matter how large the passing unit is, it can only exit constrained lanes a few vehicles at a time. Today's long-range AT systems and accurate rapid-fire tank systems will stop an Alamein-type attack at a prohibitive cost to the passing unit.

Reconnaissance. The reconnaissance requirements for a stationary (defending) unit and a passing (attacking) unit are not complementary and are normally in conflict. The stationary unit looks for threats to the viability of its defense, focusing on enemy offensive indicators. Its intelligence assets are inadequate for its own requirements. Thus, the stationary unit would be very reluctant to devote its limited assets to look for minefields, defensive strongpoints and key weapon systems.

The intelligence requirements cannot always be assumed by the passing force. Secrecy requirements can prohibit the use of the passing force. For example, the passage of a US unit through an allied unit would restrain the employment of US-peculiar assets and soldiers to gain the information required. The enemy's discovery of US assets or soldiers could tip them off to the area of a major US counterattack in



Montgomery ordered a resumption of 10 Corps' attack the evening of 24 October. . . . However, this attack also failed. The armored units were unable to get enough combat power deployed forward to break through these defenses. Montgomery was forced to halt this failed operation and focus his efforts elsewhere.

sufficient time to ensure its defeat.

If secrecy is not an issue, employing US assets near or beyond the forward line of own troops (FLOT) becomes a command and control issue. The stationary unit will require control of all these units beyond the FLOT. This unit will also have to provide active support to the insertion of reconnaissance elements into the enemy's sector. The employment of radio interception units, drones and radar acquisition elements creates particular problems for the stationary unit.

Most passage operations or plans normally fail in this area. The passing unit never gains the

The intermingling of six divisions and two corps created an immense control problem that was never really resolved on the battlefield. . . . Montgomery had seriously underestimated both the difficulty of the passage operation and the time required.

essential information that is critical to its success. At Alamein, Montgomery refused to permit ground reconnaissance forward of the British minefields. The deception operation further limited the intelligence-gathering operation of all three corps. Today and at Alamein, the lower levels (brigades and battalions) never receive the information so crucial to the success of their attacks. All too often only the upper echelons' needs are served by the limited assets available.

Bypassed Units. Throughout all of the passage operations in Alamein, the passing units were seriously hurt by the inability of the infantry units to clear all enemy positions that could fire into the lanes. A bypass criteria should have been established to clearly define the requirements of both the passing and stationary units in the security of the lanes. No one had the mission of destroying any enemy strongpoint that could engage the columns by direct fire. In *Lightfoot*, the British infantry units believed that the seizure of the forward objective lines was the predominate factor. The clearing of bypassed units was not a priority for the attacking infantry units.

Seldom is a bypass criteria established by the headquarters controlling the overall passage operation. Each unit, both stationary and passing, has to clearly understand its responsibility in the clearance of the areas dominating the passage lanes. A single statement, such as one granting authority to bypass company-size enemy positions, is clearly inadequate in a passage operation.

Liaison. Current US doctrine on passage operations places great emphasis on the collocation of headquarters and the establishment of liaison officers (LNOs) between units and essential

functional elements. The Alamein experience clearly validates this emphasis. None of the sources consulted in this study ever mentioned a single instance of collocated command posts (CPs). Commanders at division and corps never seemed to be in touch with their counterparts. Difficulties that could have been rapidly overcome by collocated CPs became major issues as they worked their way to Eighth Army Headquarters for resolution.

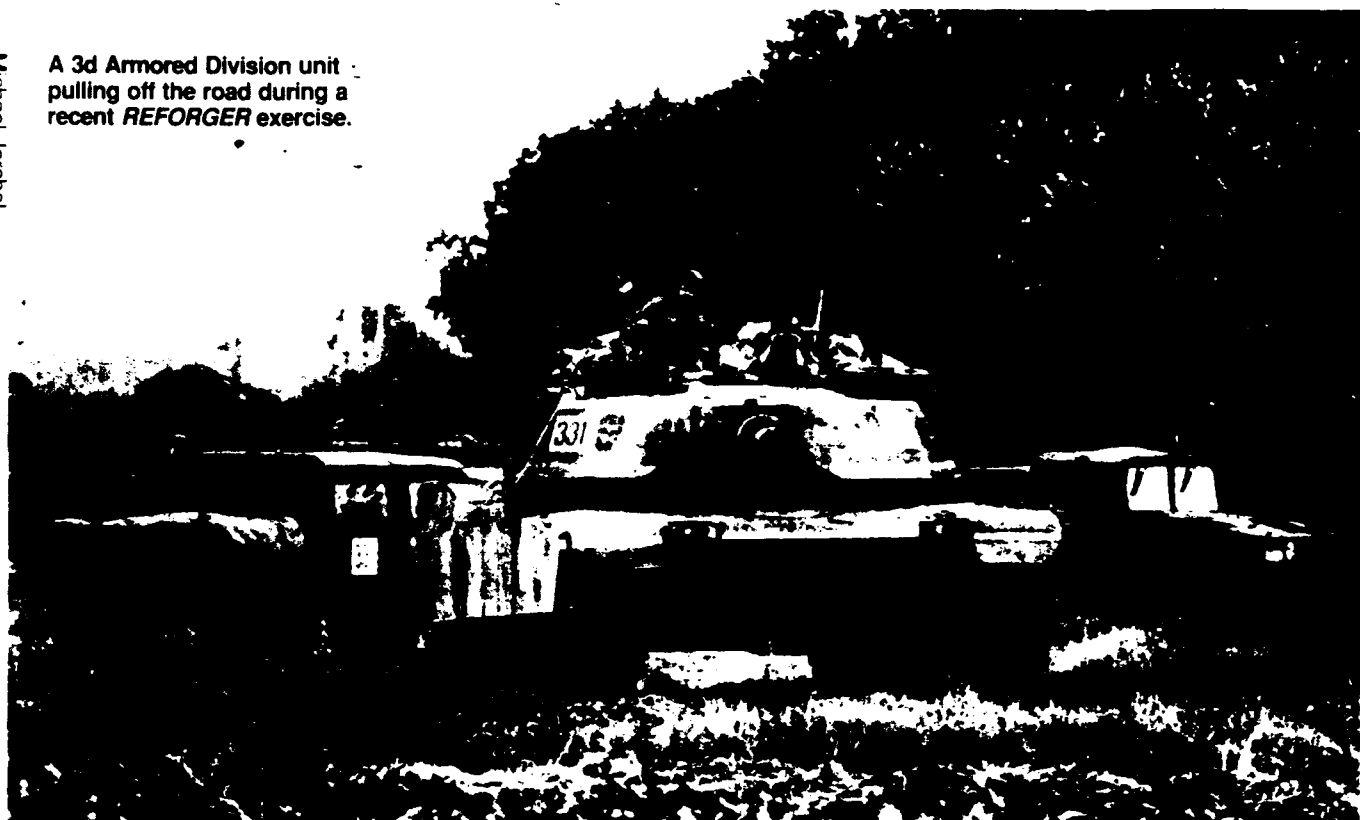
The collocation of CPs seems like a simple task to execute. Yet, like most things, it is more difficult than expected. The stationary unit's CP does not want the burden of another CP until the last possible moment. In contrast, the passing unit wants to establish a collocated CP immediately. If the stationary unit is executing a defense in depth by giving ground, the addition of new CP elements throughout the array of headquarters can add a significant problem to the mobility of the CP.

Collocation is more than just a staff function. At some point, the commanders involved in the passage must be close enough to meet face to face to resolve those crucial issues that can only be resolved by commanders.

Communications between passing unit LNOs and between the LNO/CPs and the main CPs, located in the rear assembly areas, are a difficult problem. If the stationary unit is an allied force, secrecy considerations can limit the use of any communication assets that could be identified as peculiar to the passing unit. Even if no secrecy is involved, the limited amount of frequencies or channels available might make the imposition of the LNO/CP assets an unbearable burden on the stationary unit's operations. The addition of three or four active radio networks at a CP can make it an even higher priority for enemy attack.

Passage plans always claim that the passing unit will use the stationary unit communications until the passage unit takes control of the battlefield. This concept in an operation including large numbers of battalions and brigades would fail. Too many units would be using all too few frequencies. The differences in secure communication capabilities and radio or multichannel

A 3d Armored Division unit pulling off the road during a recent REFORGER exercise.



Units march as combat teams so that the column or serial can go only as fast as the slowest vehicle—which is usually a 155mm self-propelled howitzer, an (AVLB) or an overloaded truck pulling a trailer. Even in the best conditions, these columns cannot maintain the normally designated 20 mph march speed—especially with a 10-minute break every hour or so.

equipment further complicate this simplistic solution. The stationary force, if actively involved in combat, will be unable to suffer the degradation of its communications networks. The appetite of the passing unit's elements and CPs has to be limited. A greater reliance on messenger—air or wheel—with the resultant delays might be the best solution to this problem.

Who is in Charge? At El Alamein, Montgomery placed 30 and 10 corps on top of each other in a narrow sector without any active headquarters guiding their actions and supervising their execution. Eighth Army was too far removed from the action, in terms of both philosophy and distance, to provide the timely, necessary command of the battle. Neither corps commander actually controlled the entire battle. The 30 Corps commander was in control of his infantry battalions, but there was a gap in responsibility for all of the engagements fought behind the lead infantry battalions. Neither corps headquarters understood the actual location of either its own or the other corps' units. Fire control, either direct or indirect, in such an environ-

ment was an impossible task. The responsibility to control the fight behind the lead infantry battalions among the intermingled units of both corps was never established by Eighth Army.

A contemporary passage operation demands a much more detailed description of command relationships throughout the various phases of the action. Each of the passage phases requires a clear definition of who is in charge under a clearly defined set of conditions. These conditional definitions must match every reasonable set of circumstances and be clearly understood throughout the command. There can be no doubt as to who is in charge in a moment of crisis.

This issue runs deeper than just maneuver units. Someone has to be responsible for ensuring that all combat, combat support and combat service support units of both passing and stationary forces are integrated into a synchronized program geared to produce victory. That headquarters must be cognizant of every aspect of all the myriad subordinate unit plans and must possess the charter to veto any action that does not support the overall plan. Passive supervision by the

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operation's overall headquarters cannot be accepted. A passage operation so intertwines two units that every action is related. This is not a time for passive supervision by their common headquarters.

The command issue does not end when the passing unit has taken control forward at a determined battle handover line. Bypassed enemy units, security of routes and rear area threats all have to be dealt with as the battle races forward. The passing unit commander should be left free to concentrate on his battle. The stationary unit can continue to manage most of these activities to the rear of the battle handover line, to include serving as the headquarters to control indirect fires behind a designated line. The stationary unit cannot begin its recovery and preparation for future operations as soon as the passing unit assumes control of the forward battle.

Routes. Much debate has been generated regarding the number of routes a division or corps requires in a contemporary passage operation. Major Peter S. Kindsvatter's study on the moving of a heavy corps provides some important data in this area. He determined that the modern heavy corps has over 22,000 vehicles as compared to a similarly organized World War II corps of 9,400 vehicles. A modern US division, with attachments of an artillery brigade, engineer battalion, tracked smoke chemical company and Chapparel battery, has a pass time of 26 hours and covers a road space of 560 kilometers (assuming a 50-meter interval between vehicles).¹¹

Obviously, the number of routes assigned to a corps will reduce the pass time of the entire unit. A single route for a corps would make the entire operation unfeasible, with the earliest arriving units stuck in forward assembly areas for several days before the last units in the sequence had even departed their initial staging area. The fewer the routes, the longer it will take to get the essential combat power forward. It appears that a division with less than three routes will take too long to collapse into its assembly areas in the immediate rear of the stationary unit.

Two important issues from both Kindsvatter's study and some contemporary plans are the speed of the march and the use of full headlights. The addition of the faster M1 Abrams tanks and Bradley fighting vehicles has not actually added a significant speed factor to road marches. Units march as combat teams so that the column or serial can go only as fast as the slowest vehicle—which is usually a 155mm self-propelled howitzer, an armored vehicle launched bridge (AVLB) or an overloaded truck pulling a trailer. Even in the best conditions, these columns cannot maintain the normally designated 20 mph march speed—especially with a 10-minute break every hour or so. The use of blackout drive (marking lights without headlights) at night from staging areas to the tactical assembly areas behind the stationary unit seems ill-conceived. The headlights of a heavy division's 5,200 vehicles will not significantly enhance enemy detection. The noise and road congestion of darkened vehicles will be noticeable to any in-place enemy elements watching certain routes. More likely, the movement of a corps' 22,000 vehicles will be detected by air or space platforms, using thermal, infrared or moving target indicators. Why not use headlights that will increase speed and decrease time-consuming accidents without adding any real increase in the enemy's detection capabilities? If an enemy scout is close enough to see these columns by headlights, then he will be close enough to hear them and count blackout drive-illuminated vehicles.

Good deception operations can confuse the enemy's analysis of the corps movement. The



US and Dutch vehicles
at a ribbon bridge near
Hameln, Germany, Sep-
tember 1988.

Plans to bypass chokepoints, with on-site guides continuously present, are absolutely essential to keep the routes open. Bridging equipment or recovery vehicles have to be staged at critical points for immediate use. The air defense of the routes cannot be planned for by counting on distant high-altitude systems. The loss of a route or lane could be catastrophic, and the potential for staggering losses to air attacks is extremely high.

normal vehicle congestion alone will provide an element of confusion. The lead division could actually be the reserve division and move to an assembly area that could point to an area other than the intended main attack area. A series of assembly areas could be used, if time is available, to further confuse the enemy's commander. At Alamain, Montgomery was unable to achieve operational surprise. Yet, his deception operation succeeded in achieving tactical surprise. In today's environment of sophisticated intelligence systems, perhaps that is the only reasonable goal.

According to US doctrine, the stationary unit

is responsible for traffic control, both ground and air defense, and route maintenance. However, the passing unit can also be tasked for support in an allied passage operation. Military police teams with members from both units can be more effective in route control. The passing unit might have to provide air defense and engineer assistance if the allied unit lacks the equipment needed. Plans to bypass chokepoints, with on-site guides continuously present, are absolutely essential to keep the routes open. Bridging equipment or recovery vehicles have to be staged at critical points for immediate use. The air defense of the routes cannot be planned for

Passage plans always claim that the passing unit will use the stationary unit communications until the passage unit takes control of the battlefield. This concept in an operation including large numbers of battalions and brigades would fail. Too many units would be using all too few frequencies. . . . The stationary force, if actively involved in combat, will be unable to suffer the degradation of its communications networks. The appetite of the passing unit . . . has to be limited.

by counting on distant high-altitude systems. The loss of a route or lane could be catastrophic, and the potential for staggering losses to air attacks is extremely high. A high-low mix of air defense must be in place at all times.

Terrain Management. The saturation of two large units in the same area makes an already inadequate terrain management system totally deficient. The problem begins with the collocation of CPs. Next comes signal and military intelligence units to begin the collection of intelligence and establish the communications networks. The combat support elements arrive next to be in position to refuel or fix the combat units as they arrive. Perhaps the full CPs of the passing units arrive next, followed by air defense units. Artillery units will be pre-positioned to assist in the counterbattery program and preparatory fires. Combat units arrive last. This all occurs prior to the passage operation. Thus, the stationary unit has to control the terrain management of all these units in addition to its own. Every unit wants the terrain best suited to the capabilities of its own system. These demands by passing units cannot always be met.

If a stationary unit is actually conducting a defense in depth, the terrain management problem is further complicated. Since the stationary (defender) is moving backwards, the passage area selected is an assumption that may or may not be validated by events. Collocation and forward

positioning becomes an exercise in futility, if the defender cannot hold forward of the intended passage area. The numbers of vehicles and units involved make command and control in such a fluid situation very difficult.

Logistic Issues. The first problem in the logistic arena is the movement of the stationary unit's essential supplies and casualties. As seen at Alamein, the infantry divisions were almost completely unable to move supporting vehicles forward or casualties back. It must be remembered that the stationary unit, under almost every set of conditions, will be conducting a significant engagement prior to, during and after the passage. Many contemporary plans dedicate every conceivable route to the passing unit. Perhaps at least one must be dedicated to the stationary unit. Routes could be denied to that unit from 24 to 48 hours, but few units can continue to function with its supply lifeline cut off for that long a period.

The passing unit's casualties also need to be able to be moved to the rear. The British attempted to forward position advanced dressing stations, immediately behind the infantry divisions, throughout the depth of the sector. Ambulances also followed the infantry battalions to begin immediate evacuation. The narrowness of lanes can completely stop any rearward movement. Many contemporary plans call for the medical units to be left far to the rear of the stationary units. These same plans usually restrict the number of vehicles sent forward through the lanes in the initial assault. A clear solution to medical evacuation has yet to surface.

US doctrine calls for the stationary unit to provide all logistic support to the passing unit during the passage operation. Yet, many allied nations do not support this concept or they will comply only selectively. The differences in equipment and capabilities between allies also affects this logistic support arrangement. At a minimum, casualty and vehicle evacuation by the stationary unit can be of great assistance to the passing unit.

In passing divisions equipped with M1 tanks and Bradleys, the most essential item of supply

will most probably be fuel. Fuel assets will have to accompany battalions designated to penetrate deep into the sector. Aerial resupply of fuel might become an essential element of support of the entire operation.

Artillery. The headquarters controlling the entire passage operation must have a comprehensive fire support plan, integrating all indirect-fire assets of both the stationary and passing units. A provocative program was used by the British 13 Corps, the night before the attack, to get German artillery to return fire and thereby provide firm target locations for counterbattery fire. The German fire discipline was too good; they did not return fire. Yet, a counterbattery program was an essential element of the artillery schedule. The British used a combination of creeping barrages and point concentrations to cover the infantry attack and destroy suspected enemy positions.

Today's simulated war games or training exercises at the combat training centers fail to portray the suppression and obscuration effects of indirect-fire systems. Passage operations can use both these effects from massed fires to help gain that dispersal time forward of the exit points for the passing unit. Plans must have artillery units well forward in the passage columns to provide continuous fire support to the lead battalions. Yet, the artillery commanders must under-

Neither corps commander actually controlled the entire battle. . . . Fire control, either direct or indirect, in such an environment was an impossible task. The responsibility to control the fight behind the lead infantry battalions among the intermingled units of both corps was never established by Eighth Army.

stand that the lead battalions might not have been able to clear the area of bypassed enemy units. The artillery might have to deploy in less-than-friendly areas to fire supporting missions. Hopefully, they will not have to deploy into enemy minefields as the British artillery did at Alamein.

All three passage operations conducted at Alamein were chaotic and clumsy. Failure in all three allowed a numerically inferior enemy to inflict significant losses on the British force. However, the British were able to defeat the Axis army because of determination, superior numbers and an ability to improvise at the operational level. Modern forces on a future battlefield cannot afford to attain success at such expense. A failed passage operation can be so catastrophic as to cause defeat for the entire force involved. **MR**

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M WWII ALMANAC

The "Steel Pot": A World War II Veteran

By John Reichley

A tried and true battle-tested piece of American military history entered the supply system 50 years ago this month. An April 1940 article in *Time* magazine stated:

"In WW I, 60-80% of U.S. soldiers' wounds were caused by shell splinters and spent bullets; many a soldier could thank his tin hat for stopping such missiles. Probably many more could have been kept off casualty lists if the U.S. helmet protected the neck and sides of the head, as the German tin hat did. Yet soldiers in the U.S.'s present Army are still outfitted with the same old headgear. Last week they had hopes of better. After 23 years of brooding over the simple problem, the Army's leisurely Ordnance Department announced that it was looking over a helmet designed more like the German one, and might adopt it."

But the "leisurely Ordnance Department" lived up to *Time*'s name for it, and the helmet was not issued to troops for a couple of more years.

Warriors have used some sort of protection for their heads since the dawn of warfare. Protection has ranged from turtle shells to animal skins, to tin, to bronze, to leather, to steel, to fiberglass.

The era of the modern helmet began during World War I. In early 1915, a French general named Adrian visited a field hospital. Wounded soldiers in one ward had all been in the same trench when a German shell hit, and all but one received head wounds.

The soldier with his head unscathed said he had been on kitchen police duty and had stuck a steel pot (a literal one) on his head moments before the shell hit. The cook pot was riddled with shrapnel, but the soldier's head was not.

Impressed, Adrian soon developed a metal helmet with a leather liner and chin strap. It became known as the Adrian model, and its basic shape, with different insignia affixed to the front and

painted different colors, was soon adapted and used by Italy, Belgium, Serbia, Siam, Russia and a few other countries during World War I.

Britain introduced its own design later in 1915. Its shape reminded troops of a fried egg. When American doughboys went "over there" in 1917, they wore essentially the British-designed helmet but with a different liner.

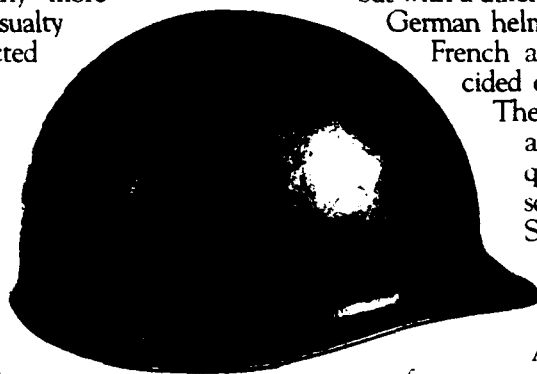
German helmet designers looked at both French and British helmets but decided on a totally different design.

Theirs first appeared in 1916, and Allied propagandists quickly dubbed it a "coal scuttle" because of its shape. Scuttle-looking or not, medical historians say it was the best head protection used during World War I.

A corporal in a Bavarian infantry wore one and found its weight unacceptable. A few years later, in 1935, the former corporal was in a position to do something about it. As chancellor of Germany, Adolf Hitler approved a redesign of the 1916 helmet and had the new, lighter 1935 model issued to the budding *Wehrmacht*.

Meanwhile, across the Atlantic, the US Army was still wearing the 1917 "fried egg" although the liner and chin strap had been changed after World War I. Many people, seeing photos of Pearl Harbor and the fall of the Philippines in early 1942, are surprised to see US troops wearing what appears to be the World War I helmet. They think something is wrong with the picture. Something was perhaps wrong, but not with the picture.

The research and development folks were at work after all, it turned out. On page 49 of the October 1941 *Military Review* a brief notice proclaimed that the search for a good, all-around helmet seemed to have ended satisfactorily. During World War I, the US Army, on the hunt for a suitable helmet, tested a number of models and finally settled on the British "shrapnel hat." It was considered to be the best that could be procured within





reasonable ballistic limits.

The result was the TS3 helmet which covered 80 percent more of the head than the 1917 helmet and was many degrees cooler. A fabric liner, in the precise shape of the helmet, is worn as a hat. The steel helmet fits over the liner which then provides part of the helmet suspension.

When first issued in April 1942, the new GI helmet was known as the M-1 rather than as the TS3. It was the only military headgear with a separate liner that was part of the helmet.

It served GIs through three wars and a few skirmishes, and just before Grenada in 1983, it was replaced by a new helmet made of fiberglass called kevlar. Due to its very Germanic appearance, the new helmet was dubbed the "Fritz" by the press. The Army denied the connection until a former chief of staff agreed that it did indeed appear Germanic. After his pronouncement, I cannot recall one reporter calling it a Fritz.

How things change. When the *Binaestrich* was formed in the mid-1950s, it adapted a virtual look alike of the M-1 except the German helmet had a built-in liner. It is still in use today, while US troops in Europe run around in their very Germanic looking helmet.

The kevlar helmet was adjudged to have saved a dozen or more lives in Grenada. More lives were undoubtedly saved in Panama. The recent 100-hour ground war in the Middle East probably was too brief to have built meaningful statistics about the benefits of the now-proven kevlar helmet.

There are probably a lot of soldiers out there who are glad the once "leisurely Ordnance Department" got into gear and cranked out a better product. The safety advantages probably outweigh not being able to wash underwear and shave in the old steel pot.

The kevlar helmet is even more comfortable. It comes in three sizes for better fit and comfort, weighs about the same and protects the wearer's head better than any tin hat, shrapnel hat or steel pot in history. The oft-maligned "loggies" have come through yet again.

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Combat Casualty Care: Ready for the Last War?

By Major Karl R. Kerchief, US Army Copyright 1991

The Army Medical Department's (AMEDD's) mission of conserving the fighting strength of US Army soldiers is twofold—to provide for combat casualty care and military hygiene. While military hygiene (preventing disease and nonbattle injuries) makes the greatest impact on commanders' "fit for duty" strength and markedly increases the number of effective soldiers available for the battlefield, AMEDD and commanders should also be concerned about the combat casualty care that can be provided to soldiers wounded on future battlefields.

AMEDD has done extremely well in providing medical care to soldiers in past wars. A look at the percentage of World War II, Korea and Vietnam soldiers surviving battlefield injuries shows the percentage steadily improving. But have the lessons of the past been learned too well? Are AMEDD and its war surgeons ready to assist the wounded soldiers of the next war?

If the best medical care on the future battlefield of the next war is to be provided to wounded soldiers, three areas strongly need to be reviewed and rethought: evacuation, hospital facilities and surgical training.

Evacuation. AMEDD combat casualty care plans rely heavily on helicopter evacuation of wounded soldiers. This reliance, almost to the exclusion of ground ambulances, is a serious mistake. Helicopters are not available 100 percent of the time. Considerations such as weather and the tactical situation can seriously affect their availability.

The original "Letterman style" of medical evacuation, still the "standard" evacuation and treatment system, moves wounded soldiers by ground ambulance back to mobile hospitals or clearing stations. Patients are then triaged according to the severity of their wounds. Accordingly, the injured are separated into four categories:

- Soldiers who are alive but would require inordinate quantities of time and resources, with little chance to save their lives, are not treated (expectant).
- Soldiers who are severely wounded and able

to be saved by relatively quick intervention are operated on immediately.

- Soldiers who are less severely injured but not able to return to duty are stabilized and either treated at the forward hospital or sent to another medical facility farther to the rear.

- Soldiers with minor wounds are delayed, treated later and then quickly returned to their units.

The Korean and Vietnam wars saw important exceptions to this standard evacuation and treatment system. Helicopter medical evacuation worked well in the latter part of the Korean War and became the standard in the Vietnam War. As the helicopter developed as an ambulance and because it was faster, safer and less traumatic, it became the preferred and usual method of evacuating injured soldiers. Rapid evacuation of casualties to a relatively large number of fixed facilities staffed with teams of surgeons was determined to be the best method for patient care. This allowed treatment of wounded soldiers who, in any other war, would never have made it to medical facilities. The result was that some or many links in the old medical evacuation process were bypassed. Because the battalion aid station and the clearing station were skipped, they assumed less important roles.

During the latter part of the Korean War, the helicopter allowed "the patient [to] be taken rapidly and safely to that hospital facility best staffed, equipped, and situated for the care of the particular type of wound. The selectivity [due to speed, range and flexibility] further promoted the effectiveness and economy of forward medical service."¹ "The use of helicopters reduced the need for forward hospitalization facilities [and] physicians with special training [were] usually located no further forward than fixed surgical hospitals."² The AMEDD found that by using "helicopter evacuation, the hospitals could stay longer in each location and allow four or five days of post-operative care for a patient before further evacuation."³

The use of helicopters in the nonlinear type of war fought in Vietnam appeared to validate the AMEDD's use of the helicopter in combination

with relatively fixed hospitals. The geography of Southeast Asia, with its mountains, jungles, marshy plains, few passable roads or serviceable railroads and the guerrilla nature of the war provided the perfect combination for using the helicopter as an ambulance.⁴

Admiral Ben Eiseman and Lieutenant Colonel Craig H. Llewellyn, commenting on military medicine in Vietnam, both observed that the "Letterman style" of triage of wounded in the expectant category was ignored in many cases. Since wounded soldiers from one engagement could be taken to a variety of different hospitals, generally, no one facility was overloaded. The civilian philosophy of directing the major effort to the most seriously injured was often used. The luxury of relatively unlimited supplies and manpower combined with superb facilities, allowed this approach.⁵

However, the latter part of the Vietnam War, the Seven Days' War in the Middle East and the ground-to-air battles in Afghanistan revealed the helicopters' extreme vulnerability to heat-seeking missiles. The SA-7, a shoulder-fired heat-seeking missile, was introduced late in the Vietnam War. Although soldiers using it were minimally trained in its use, on the average, it took less than two of these missiles fired for each helicopter shot down.⁶

Dr. Robert M. Hardaway believes that, for this and other reasons, the helicopter may be more of a liability than an asset in attempting patient rescues during future wars. He states, "During the Seven Days' War in the Middle East, heat seeking surface to air missiles all but negated the use of helicopters."⁷ Many believe, as does Hardaway, that the development of heat-seeking missiles summarizes the end of an era.

Helicopters became the "wonder ambulances" in the Korean and Vietnam wars and helped save innumerable lives, as they will do in future wars based on their ability to get injured troops to medical care. However, in future actions, the proliferation of extremely accurate heat-seeking missiles will decrease their mobility. In mid- to high-intensity scenarios, the helicopter will be unable to continue the massive field medevac mission it did in Vietnam.

Low-intensity conflicts (LICs) provide another area where medical evacuation is often accomplished by helicopter. Although no heat-seeking missiles were encountered in Grenada or Panama, Afghanistan is an example of where heat-seeking missiles were introduced into a LIC environment, and they caused significant problems. Kenneth P. Werrell reports that Afghan rebels were downing 15 to 20 Soviet helicopters per month in the spring

of 1987.⁸ Whether the helicopter can continue to provide safe medical evacuation in a prolonged LIC environment remains in doubt.

Hospital Facilities. An outgrowth of the reliance on helicopter evacuation is the lack of hospital mobility. War surgeons should go to mobile facilities as far forward as possible to treat the wounded. Helicopters have provided such excellent mobility to the wounded on the battlefield that AMEDD hospitals have become fixed in place as virtual monuments to modern medicine. The current system, with limited mobility of the combat support hospital and evacuation hospital, is being replaced. But, in the case of the new and improved combat support hospital, it is no more mobile than its predecessor. Lack of hospital mobility is fine when there is almost total air superiority and the wounded can be brought to the hospital. But, when the wounded cannot get to the hospital because of grounded helicopters and the hospital cannot get to the wounded because of the lack of mobility, many soldiers will die.

If evacuating the patient to the hospital will be a problem, the type of hospitals that must be available on the battlefield of the future is clear. To keep up with the increasingly mobile divisions executing AirLand Battle doctrine and to provide adequate early surgical support, the hospitals must either be 100-percent mobile or expendable. Expendable hospitals are usually expensive and thus unlikely. The emphasis, instead, should be on miniaturizing medical and surgical equipment to make them lightweight and portable.

Complete organic mobility and ease of setup should be the rule. In an era of shrinking assets, medical units cannot rely on other units to provide their mobility. If an item cannot easily be made portable, surgeons must learn to do without it or be willing to leave it behind in a hasty move. Providing good medical care to wounded soldiers *where* they really need it may require us to sacrifice equipment and supplies as a cost of doing business.

One cannot expect to have a forward field hospital with all the equipment found in a modern teaching hospital. Surgeons must use clinical judgment as the basis for their decisions and rely less on sophisticated, mostly nonportable, equipment. Consideration should also be given to increasing the number of mobile hospitals, especially if they become smaller and more mobile. If helicopters are not available to allow a choice of overflight to a less busy facility, the surgical capacity of available hospitals may be consistently overwhelmed.

The French have a parachutable surgical unit

designed to function independently for about 24 hours. It can get as close to the action as is possible. Surgeons are able to operate on soldiers when evacuation is impossible. It also helps the survival rate of those soldiers who would not survive a long evacuation—those first-priority cases with respiratory or circulatory distress.⁹ The French have taken a lesson from our logisticians, pushing support as far forward as possible. Our Army does not necessarily need a parachutable hospital, but it does need equipment and people that can respond in a similar fashion because delays in getting the wounded to medical care result in higher fatality rates.

Colonel Ronald F. Bellamy presents excellent World War II statistics on the potential increase in fatalities caused by a delay in access to medical treatment. A 6-hour delay in treatment would increase the rate of predicted mortality from 19.5 percent to 26 percent. A delay of 24 hours would raise the rate to 32 percent.¹⁰ Dr. Daniel P. Rignault presents equally damning data from the fighting in Chad in 1980 and 1989. To summarize, air evacuation was not available for the injured, and it was a long distance by ground to the hospitals. Almost no patients with head, chest or abdominal wounds survived the lengthy evacuation to reach medical care.¹¹ These data strongly support early intervention.

To prevent a soldier from becoming a similar fatality in the case of delayed evacuation, there must be a strong emphasis on field medical care. Simply applying a tourniquet or pressure bandage may save someone's life. Also, the ability to transfuse intravenous fluids cannot be overemphasized.¹² These simple interventions will result in more patients reaching the hospitals and the surgeons alive. However, as shown above, the hospitals must be closer to the patients if ground evacuation is to be successful in saving any but the least injured patients.

The concept of the forward area surgical team is an early attempt to remedy the problem by taking a two-bed operating room up to the medical company of the forward support battalion. There are currently only a few of these teams available. A viable alternative, but one still on the drawing boards, is the patient treatment and evacuation vehicle proposed by Colonel Jon H. Buscemi that would solve many of the mobility and equipment problems discussed above.¹³

Surgical Training. The training of "war surgeons"—those individuals who will be the "B. J. Honeycutts" of future battles—needs to be addressed. Do they need a different type of training,

than is currently received to operate on battlefield casualties in a future war? Recent discussions in medical literature cast serious doubt whether military or civilian war surgeons are being properly trained to give the best battlefield surgical care.

Where do the future war surgeons come from? They come from three basic areas: Active Army, Reserve Components and civilian conscripts. The problem is that the active duty military physicians drawn from military health care facilities have been functioning in a peacetime environment; most of the reservists practice in a peacetime civilian setting with only limited exposure to military peacetime environments; and personnel obtained through selective service have generally seen no military training.¹⁴

None of these surgeons are trained to assume wartime duties. According to Llewellyn, war surgery is not taught formally at any military surgical residency program, nor at any civilian program.¹⁵ There is no continuing medical education program to teach and maintain competency in war surgery. For years, the military medical departments have felt that an actively practicing surgeon can make a quick transition to war surgeon. It was felt that readiness for the wartime mission is maintained by practicing medicine and surgery in military hospitals. But taking care of patients, even if they are soldiers, in a peacetime environment does not prepare surgeons for war. The conditions of personnel, technology and resources available in a peacetime, fixed-base hospital are unknown in a battlefield environment. There is no simple way to create the context of operational and medical combat casualty care. Practicing medicine and surgery in fixed, up-to-date military hospitals prepares physicians for war about as well as police department duty would prepare the infantry for combat or commercial aviation would prepare pilots for close air support.

Is there really a difference between wartime and civilian surgery? Rignault argues there are several significant differences and cites seven special characteristics of war surgery:

- It deals almost entirely with emergencies.
- It often involves minimal technically advanced equipment.
- It is forced to deal with mass casualty situations.
- The results depend significantly on the care given to the wounded soldier before getting to the hospital and the evacuation that may be fast or slow depending on the tactical situation.
- The surgical treatment is provided not in a single echelon but in successive echelons.
- The types of injuries caused by warfare are

specific.

- The reasons to do surgery and the techniques used must consider all the above differences.¹⁶

It is intuitive that there are no elective surgical procedures on the battlefield in its emergency environment. Surgeries are done there to save lives. It should also be noted that surgeries performed in echelons occurred less frequently in Vietnam than in other wars because of the ability to fly the wounded directly to fixed hospitals. Llewellyn agrees: "War surgery is characterized by frequent surgical backlogs being handled by general surgeons who must only do the essential life-saving surgery and prepare the casualty for early evacuation to a general hospital to the rear."¹⁷

In caring for a wounded soldier, different surgeons will be successively in charge of the same patient. The first surgeon who provides care will stabilize the patient and then transfer the patient to a second echelon of care closer to the rear. There, the second surgeon will have only clinical judgment and any notes sent by the first surgeon to make patient management decisions. It is very unlikely that the second surgeon will have direct contact with the first surgeon. The second surgeon may also provide care and may evacuate the patient even further to the rear. A third surgeon would then assume care of the patient and may reoperate, as in a delayed primary closure of wounds (wound closures delayed to reduce the risk of infection). Having echelons of medical care, with one surgeon passing the responsibility of care to another, requires a somewhat more standard approach to wound management. Rignault notes:

"A certain degree of standardization in that choice [of operation] is highly recommended so that, at each echelon, successive surgeons will easily guess what has been done and what to expect. This is not the time for any innovative techniques that may mislead the next physician. . . . the simplest and safest [operation] must be preferred, especially for the initial lifesaving or stabilizing surgery. . . . It is better to save the patient with three successive 'nonglorious' operations, rather than kill him with a brilliant but complicated one. As has been stated in the past, this type of surgery is a lesson in humility."¹⁸

The types of wounds war surgeons see differ from those civilian surgeons generally see. Characteristic war injuries are blast injury, crush injury, both flame and incendiary agent burns, white phosphorus injuries, penetrating trauma, high-velocity missile wounds, combat environmental contaminant exposure, polytrauma and "polyaggression" or combined injuries.¹⁹

Blast injury is relatively rare in peacetime but is well documented in wartime literature. Blast injury survivors who survive the immediate blast often show no apparent injury for hours. Surgeons not skilled in the possibility of this injury could easily miss the early signs when they begin to occur or mistake them for a different process. Captain Arthur M. Smith notes that developing technology like the fuel-air explosive will make the potential for blast injuries even more common.²⁰

Penetrating trauma and high-velocity missile wounds are becoming more common in some of America's inner cities. We are slowly beginning to take advantage of this sad situation by placing some of our military surgeons in training at these trauma treatment centers.²¹ There are arguments both for and against the applicability of these experiences to the war surgeons' job. The centers provide experience in quick and skillful repair of wounds. The caveat is that the resources available to the trauma center are often far greater than those that will be available in time of war. As noted above, the battlefield hospital may be minimally equipped and staffed. At the civilian center, there is usually no effort or need for triage of the wounded. Yet, training in triage is also needed.

Infections in wounds are common in wartime injuries. Gas gangrene is far more common because of the extensive soft-tissue damage that accompanies high-velocity wounds. The reasoning behind not closing wounds completely at the initial surgery (delayed primary closure) is to keep bacteria highly sensitive to air from growing. In the Falklands conflict, the Argentine physicians handled many wounds by primary closure which resulted in several cases of tetanus in their wounded. Smith notes that, without civilian expertise in this area, 27 cases of gas gangrene were recorded between 1964 and 1974 in Miami, Florida—more than in the Vietnam War. Smith also notes:

"It is uncertain whether our future combat wounded, managed by active duty, reserve, and conscripted military physicians, will be adequately treated. It is imperative that those responsible for providing the care of combat wounded receive updated clinical guidance [to ensure] proper combat casualty care."²²

In short, AMEDD needs to provide appropriate surgical training in this area before someone is hurt. Civilian training does not currently provide a high enough index of suspicion for contamination in wounds.

Another area requiring special training is burn management. There is still no complete agreement on exactly how to best treat injuries caused by

incendiary agents (compositions of materials that burn with intense local heat) and white phosphorus (used as an incendiary and as a smoke screen). Part of the problem with these agents revolves around the variable nature of the severity of the injury. Local burns and associated lung injuries change because of additional things like the method used and the environment in which it is used.

Other unknown areas that need more training and research include the effects of inhaling some field agents used as smoke screens (both ours and the enemy's) and recognizing potential chemical- or biological-agent exposures. There is a need not only to look at how healthy troops react to an exposure but also to determine if our treatment of wounded soldiers needs to change in the event of injuries together with exposures (polyaggression). For example, what type of anesthesia is safe in someone exposed to white phosphorus-based smoke?

How do we train someone in wartime skills? At the present time, there is a significant amount of effort concentrated on Advanced Trauma Life Support (ATLS) training. ATLS is excellent for teaching the basic approach to treating an injured individual but does not cover all the war surgeon needs to know. The emphasis of wartime injuries is different. The Wounded Data and Munitions Evaluation in Vietnam data base in the Learning Resource Center, Uniformed Services University of the Health Sciences, points out that 90 percent of the Vietnam War ground combat deaths were caused by penetrating missile wounds. This is different from the civilian community where penetrating wounds accounted for only 33 percent of the total trauma deaths.²³ ATLS' focus is on handling blunt trauma, cervical spine injuries and upper airway problems. These are important to know, but the war surgeon also needs additional training on the items discussed above, especially handling multiple-fragment, soft-tissue wounds that may or may not be contaminated.²⁴

Rignault feels that all surgeons, regardless of specialty, need a three to six months "common-trunk" training program in a busy trauma center.²⁵ There, they would receive general training in taking care of civilian casualties and intensive short courses in

"rendering the rapid but adequate type of care required by massive military wounds and massive trauma in a highly contaminated and infection prone environment."²⁶ Handling the "assault rifle epidemic" in urban hospitals would give surgeons much-needed trauma skills. Some military residency programs have made initial steps in this direction for a limited number of surgeons. This program needs to be expanded to all surgeons, not just a select few.

Llewellyn points out numerous countries that teach excellent war surgery courses.²⁷ They are included in their surgery residency programs. These countries also send their active duty and reserve surgical residents and graduate surgeons abroad to gain experience in war surgery. Many of these programs are associated with the International Red Cross. AMEDD needs to not only look into but also perform similar assistance/training programs to either teach or refresh wartime surgical skills.

Conclusion. There are three concrete actions that should be taken to improve combat casualty care: Because of the potential technical problems and already fielded tactical developments, AMEDD should not rely on helicopters to provide all the medical evacuation and mobility; an adequate, if austere, mobile hospital is needed to assist the surgeons in their job, *especially* if there are limitations on helicopter medevacs; and, if war surgeons are going to conserve soldiers' lives, they must be trained to do so.

Providing combat casualty care and military hygiene are the Medical Corps' two main missions. It is up to AMEDD as the military medical planner for the future to focus both equipment procurement and training in the correct direction and ensure that the funds are made available. If funds cannot be made available in this era of shrinking budgets, AMEDD must continue with what it has, making our commanders aware of the potential risks.

Surgeons cannot always repair the damage one human can wreak on another. But, by attempting to review combat casualty care problems, AMEDD may be able to address and improve the care provided to wounded soldiers. We must do our best to be ready to fight the next war, not the last one.

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MR SUMMARIES

On Making Our Smaller Army a Better One

By General (Retired) Donn A. Starry
February 1991, *Field Artillery*

"As the lesson repeated in four wars tells us, the key to building effective fighting teams is twofold," says retired General Donn A. Starry. "First, we must build the soldiers' confidence in their abilities to fight and win as teams. . . . Second, we must stabilize our teams—minimize the personnel turbulence to build and retain cohesive unit integrity."

He continues by saying that "there are several other popular notions as to how the Army can be better as it becomes smaller, but most miss the mark." He then explores some of those notions.

"We have some of the best *equipment* in the world. . . . In battle, our equipment seems to perform as well as or better than that of others. But then wars aren't won by equipment, even though there's a persistent notion that our higher tech equipment will win them without soldiers' having to fight.

"We have fairly sound *organizational structures* Any organization should be considered nothing more than a transition between what was and what should come next. . . . Organizations should change to ensure the most effective combination of tactics and equipment in battle.

"We spend a sheik's ransom on *training*. The National Training Center (NTC) at Fort Irwin, California, may well be the best facility of its kind in the world. Yet . . . commanders complain that as soon as their units return to home station,

they're so eaten up by personnel changes that they're no longer the well-trained outfits that marched off the desert at Fort Irwin.

"Our *selection system* for command, promotion and schooling is thorough and fair. However, some folks still don't perform to expectations based on glowing reports in their files.

"So what makes the *difference*?" he asks. "It really doesn't make much difference what equipment is in the gun parks or how the unit is organized. It's the leadership—the cohesion and stability of a unit that make the difference."

He supports this statement by saying, "Battles more often than not are won by the courage of the soldiers, the quality of their leadership and the excellence of their training. Training as individuals is important, of course, but more important is unit training—together training." He says, "The commanders or appointed leaders can't be everywhere on the battlefield. . . . Therefore, the soldiers in the unit must be trained well enough to do things together right and until, hopefully, the appointed leaders can arrive to take charge. History provides several important and relevant commentaries on soldiers becoming teams in units with the right chemistry."

As an example, Starry uses the explanation "provided by one of the Army's finest battalion commanders of the Korean War, then Lieutenant Colonel Gordon Murch. . . . In any rifle platoon on a given day in combat, there may be as many as 20 soldiers present for duty. Of that number, about four or five will act when something starts." He calls these four or five the "doers." "Another six or eight will do nothing . . . mesmerized by the action

around them. They're the non-doers. The remaining soldiers—seven, eight or nine will follow whatever they observe going on around them. So if one of this latter group is near one of the doers, he too will become a doer. If, on the other hand, he's near a non-doer, he too will become passive.

"Unfortunately, identifying doers in advance or training soldiers to be doers and placing them strategically in units falls afoul of two of the most pernicious problems of units in battle. First, we have no organized body of data to tell trainers or commanders how to identify doers, let alone how to train doers. . . . Second, we have too much personnel turbulence from battle and non-battle casualties, which is loaded on top of turbulence created by the personnel rotation policy."

He uses policies from the Vietnam War to exemplify this turbulence. "We had deployed some well-trained units to Vietnam—as well-trained as individual and unit training in a non-combat environment could make them." But, "it suddenly occurred to the personnel managers that in a year's time the system would redeploy those units virtually en masse. So . . . they shuffled people around to have a representative mix of rotation dates in every unit. . . . Suddenly, we tossed out the effects of all the hard work, time and resources expended to bring those units to a satisfactory state of training to deploy and fight a war."

In explaining how the redeployment plan also created turbulence, Starry says, "It was decided the recent arrivals in the redeploying units would transfer to units remaining in Vietnam. The soldiers new to the theater would replace those who had fought for 10 or so months in another unit—one that would remain in the theater. No units intact would redeploy. . . . It was a typical 'management' solution. But it increased personnel turbulence in

units remaining to fight the war.

"Toward the end, lieutenants and sergeants stood in front of platoons and squads in which there were few, if any, familiar faces; they issued instructions about the combat operations of the day, hoping against hope that somehow it would all turn out right."

So, despite the lessons of World War I, World War II and Korea, "the Army, had once again, drawn its trusty derringer and ventilated important parts of its corporate anatomy."

Starry ends his article with several recommendations. "To keep history from repeating itself, we must implement several programs to live up to our responsibilities to soldiers."

- "First, while smaller may be better, it won't be because of smallness; it'll be because we have better trained units—regardless of their size. . . . A move toward smaller unit organizations serves no real purpose unless we can train units more effectively."

- "This demands more stability (less turbulence) in soldier assignments and more effective unit training systems. . . . Therefore we should adopt a unit replacement system, probably at the battalion level, on the model that served the Wehrmacht so well in World War II and is characteristic of most armies in the world."

- The Army should also "improve leader-to-led ratios, especially in cavalry, tank, infantry, artillery and engineer units on the ground, and likely in air cavalry and other combat aviation units. This calls for smaller units with more leaders per soldiers."

He makes "one final admonition. Courage of soldiers, quality of individual and unit leadership and effectiveness of training, especially unit training—these, together with a little luck, always a little luck, win battles."—DGR

MR LETTERS

The New Polish Army

Although this letter of 8 November 1990 was not written specifically to address Harold S. Orenstein's article, "A Year After the Velvet Revolution," (December 1990 Military Review), it does present some additional information. Our thanks to Dr. Orenstein for helping prepare it for publication.—Editor

The new Polish army is to be an apolitical organization. As citizens, however, Polish soldiers

should be politically well-oriented and aware of their particular role in society. They must stand on the sidelines but observe everything.

The Polish armed forces are being restructured, and a new defense doctrine is being implemented in which the potential enemy is defined as a non-descript "state X." It is assumed that all borders, without exception, must be secure. It is important to emphasize that Poland no longer views NATO as its enemy, nor does it structure its defense system

in the image of a specific enemy. Neither does Poland plan to join NATO or enter into an alliance with the Soviet Union; common interests bring Poland closer to the interests of Hungary and Czechoslovakia.

In the future, it is anticipated that the Ministry of Defense will be headed by a civilian. The new minister will control financial and personnel policies and supervise strategic research. The army will be commanded, in a newly created position, by the general inspector (military chief) of the armed forces.

These changes are taking place at a time marked by a considerable drop in production and national income, while at the same time, Poland's defense potential has been weakened, although not to such an extent as to be unable to safeguard the full security of the country.

Operational forces constitute around 55 percent of the total Polish armed forces. The remaining 45 percent of the soldiers work in central institutions, schools and mobilization units in territorial defense of the country. Planned changes include bringing the operational forces up to 70 percent of the total and increasing the "professionalization" of the armed forces by moving away from a conscript army to a professional volunteer force of around 45 percent, as compared to the present 33 percent.

The mobilization units are those located in each military district that are to be specifically used as training bases in case of a mobilization need. A need has been perceived for a less expensive territorial system of incorporating and training draftees, to take advantage of dispersed reserve stocks to organize regional defense and to effectively use existing garrisons. These mobilization units may fit the bill.

With the reorientation of strategy to "total defense," it has become necessary to change force deployment. Two new military zones will be organized in the Mazury and Malopolska regions which involves a transfer of troops east to secure the border with the Soviet Union. Poland must also buy modern armaments, create a new home front, and modernize and extend the defense infrastructure.

Poland is considering the purchase of US or Soviet fighter planes. According to Minister of Defense, Vice Admiral Piotr Kolodziejczyk, if the prices of the US F-16 Falcon and Soviet MiG-29 are close, the Falcon will be the more likely choice.

Because of budget reductions, military purchases were also reduced to 30 tanks (104 in 1989), five MiG-29s (seven in 1989), 120 anti-aircraft rockets (170 in 1989), 9,000 rounds of rocket munitions

(16,800 in 1989), 23.8 million rounds of infantry munitions (27.5 million in 1989) and 17 radar stations (28 in 1989). Investments for construction essential for the defense of the country were also considerably reduced.

The following structure for the defense budget was planned for 1990: personnel expenses—51 percent, weapons and technical equipment—24 percent, training and operation—12 percent, and investments—7 percent. Improvements for 1991 seem unlikely.

CPT Boguslaw Zieniuk, *Polish Army, Koszalin, Poland*

Airplane, Not Helicopter, Is King

Major Anthony M. Coroalles has written a very interesting article (*Military Review* January 1991) concerning J. F. C. Fuller's "master weapon" concept. The "new world" now facing us certainly requires a rigorous and dispassionate look at future conflict. Although I cannot speak to Coroalles' claims of armor's vulnerability, I do tend to support his line of argument. My conclusion, however, is somewhat different.

Prior to this century, decision in war was generally achieved by the Army; however, the wars of this century show a transition. Only closely integrated combined arms—land, sea and air—were consistently effective. It took all three arms to defeat Germany and Japan; victory by any one service was not possible. However, we are now seeing in the Gulf War a basic shift in the nature of war.

The explosion in technology will make wars of the 21st century fundamentally different. Massive ground battles will be neither necessary nor desirable; they are too bloody. Only air power can now offer a *worthwhile* decision. As B. H. Liddell Hart said, "Of what use is a decisive victory if you bleed to death as a result of it?" Always casualty-intolerant, the American people will become even more so as a result of the astoundingly low death toll in the air war against Iraq.

This war seems to indicate that the future battle space will be dominated by air forces, supported by the Army and Navy who will seize and defend forward air bases and provide logistics support. Alternatively, ground forces will be useful in fixing the enemy force, as was necessary to prevent an Iraqi thrust into Saudi Arabia. Once the Iraqi army dug in, it became vulnerable to the power, precision and mobility of air power. It will be our job in the future not to prepare the battlefield for the inevitable ground action but to eliminate the need for

that action, or at least render it anticlimactic. The savings in American lives with such a strategy would be profound.

In short, I agree with much of Corrales' prophecy of the future battle space, but I would submit

that the airplane, not the helicopter which played only a minor role in the Gulf War, is the new master weapon.

**LTC Phillip S. Meilinger, USAF, Headquarters,
US Air Force, Washington, DC**

MR BOOK REVIEWS

UNITED STATES OVERSEAS BASING: An Anatomy of the Dilemma by James R. Blaker. Praeger Publishers, New York. 197 pages. 1990. \$39.95.

The former deputy assistant secretary of defense, James R. Blaker, has produced a clear, well-reasoned analysis of the global system of US defense bases. This is not an inventory of overseas sites. Applying the techniques of network analysis to known base capabilities, Blaker has evaluated the contributions of "the system" to US security. His conclusion is that the basing system of 794 sites in 46 nations is "extensive, robust, and cheap."

It is Blaker's process of analysis that recommends this book to the reader. Throughout, Blaker focuses on the interrelation of strategy, weapons technology and overseas base capability to answer the questions he raises. He divides his network analysis into strategic airlift, tactical air, and naval and ground forces. He then cleverly weaves these strands together, showing, for example, how base capabilities for airlift and ground force operations contribute to the strategy of rapid deployment.

The reader should not fear that this is only another dry strategy textbook. It is remarkably well-written. In his review of the United States' World War II bases, Blaker notes that the US system "was more extensive than anything built previously, and while the military base structures of the Roman, Mongol, Spanish, Ottoman and British Empires were all profoundly impressive, they had been built in decades and centuries. The US basing system had been built in five years."

This book, published between the arrival of *glasnost* and the Iraqi invasion of Kuwait, prophetically observes that our ability to deliver only light forces to the Persian Gulf in anticipation of "less demanding contingencies" could be a "very dangerous development." Perhaps the accuracy of his conclusions will lead to serious attention being given to his research in the inevitable debates about our post-Cold War military posture.

The only shortcoming worth noting is Blaker's

criticism of the array of logistics bases in northern Germany that are unsupported by combat-capable US air or ground forces. He does not consider that those permanent bases would support and be supported by troops arriving under REFORGER.

The text includes a wealth of revealing tables, bar graphs and maps. Unfortunately, the quality of the graphics is a bit cheesy. Perhaps the publisher assumed the book would have a limited readership. For the sake of informed debate on the future of the US basing system, I hope they are proved wrong.

LTC Greg Baxter, USAR, Dallas, Texas

FEEDING THE BEAR: American Aid to the Soviet Union, 1941-1945 by Hubert P. van Tuvll. 200 pages. Greenwood Press, Inc., Westport, CT. 1989. \$37.95.

Military professionals are, almost by definition, pragmatists who understand that wartime allies are those whose self-interests, at least temporarily, coincide with one's own. They also appreciate that such a relationship is negotiable and, like any tradable commodity, has its assigned price. "Lend-lease" was the euphemism President Franklin D. Roosevelt used to soften the political impact of the price the United States paid in gifts to the Soviet Union during World War II to maintain the viability of this important military ally. The US ambassador to the Soviet Union, William Averell Harriman, said the United States should "give and give and give with no expectation of return or quid pro quo." It did, and in return, its wartime ally played the major military role in defeating Nazi Germany. The Soviet Union repaid in blood and homeland destruction for what the United States furnished in material aid.

This book is a detailed source of what was furnished to the Soviet Union during World War II. Short, honest and factual and like any good accounting report, it identifies which numbers are

based on solid sources and which are "soft." In the case of US-Soviet lend-lease program, this is quite simple—precisely what was given is known; what was done with the gifts is not known. The only feedback was occasional complaints about quality and persistent requests for more aid.

The shopping list was extensive, including most items of logistic importance to a wartime economy. Included, for example, were 362,000 6 X 6 trucks; 47,000 jeeps; .5 million miles of railroad tracks; and 20,000 fighter aircraft (mostly P-39s and P-40s). Entire factories, such as one for automobile tires, were also donated. Perhaps of equal importance was the technology the Soviets obtained from the gifts.

Hubert P. van Tuyl wisely admits the impossibility of quantifying or accurately judging how these gifts affected the outcome of the war, suggesting only that, at the least, it hastened the time of ultimate victory. Nor does he propose any "lessons learned" from this costly venture. But, like most historians, van Tuyl believes the sacrifice by the United States was worth the cost.

Times have changed drastically, however, since the United States plunged into this first major military aid program. The United States has since provided aid to many other countries, but except for the Middle East, predetermined conditions are usually guaranteed before the gifts are made. The United States can no longer provide an open pocketbook and ask for a "wish" list from those who seek help. As the world's largest debtor nation (primarily to our World War II antagonists), the generosity and naiveté that characterized our lend-lease program to the Soviet Union during World War II are things of the past.

**RADM Ben Eiseman, USNR, Retired,
Denver, Colorado**

FOR WANT OF A NAIL: The Impact on War of Logistics and Communications by Kenneth Macksey. 203 pages. Brassey's (US), Inc., McLean, VA. 1990. \$28.95.

Kenneth Macksey's latest work focuses on the evolution of logistics in support of land warfare over the last 150 years. Its purpose, according to Macksey, is to "encourage students and others to look more deeply into what is arguably the most important subject in the military curriculum, about which [little] has been . . . written and over which too many people tend to draw a veil for fear of engendering boredom." Macksey's study may never inspire others toward this end, but in years to come, *For Want of a Nail* will find its way onto

bookshelves of professionals who think seriously about the challenges of waging war in the modern world.

One of the most expansive studies to date concerning logistics, *For Want of a Nail* traces major campaigns of the 19th and 20th centuries, starting in Europe with Napoleon and ending in the Falkland Islands with the British. Exposed are logistics issues of all the wars involving the United States and in other conflicts ranging from the Anglo-Boer War and Russo-Japanese War to the insurgency in Malaya, the Berlin airlift, the French Indochina War and several Middle East wars. Although Macksey's purpose is to provide a general survey of logistics and the effects of technological developments (the railroad, tank, airplane, helicopter and others) on the logistics of waging war, he often shows how the most elegant tactical plans collapsed due to logistics failure.

The book centers on specific aspects of logistics: moving and resupplying soldiers and their fighting machines. Focus shifts throughout the book from tactical to strategic levels, depending on the particular conflict. On occasion, Macksey discusses medical evacuation and treatment. He seldom mentions administration, finance and procuring war resources, although he briefly explains the lend-lease arrangements during World War II. Belying its subtitle, the book provides only limited comments on communications and the evolutionary effects of communications on command and control.

Out of the seemingly eclectic stories emerges a consistent reminder: that defeat often results from insufficient logistic preparations during peace and insufficient understanding of logistic requirements during war. Therein lies the message that will haunt the tactician or logistician who devotes a few hours to reading this comparatively small book. It is a fine addition to military history and ranks with other exceptional studies of logistics and war by Roland G. Ruppenthal, Henry E. Eccles, James A. Huston and Martin van Creveld.

**LTC Kenneth L. Privratsky, USA,
National Training Center, Fort Irwin, California**

INDUSTRIAL PREPAREDNESS: National Resource and Deterrent to War by the Committee on Industrial Mobilization of the Manufacturing Studies Board. 68 pages. National Academy Press, Washington, DC. 1990.

In World War II, the United States earned the title "arsenal of democracy" for its prodigious industrial output. In 1944, US factories were producing 40 percent of the world's armaments, and from

1941 to 1945, 86,700 tanks, 97,800 bombers and more than 100,000 fighters were sent to US and Allied forces. Yet, only 40 percent of the gross national product was devoted to military production. Private consumption actually increased during the war. In 1948, the United States accounted for 56 percent of the world's total manufacturing.

Today, however, US industry is in trouble. Millions of factory jobs have been lost, plants have closed and foreign competition has taken control of a major share of the domestic market. US firms now account for only about 20 percent of the world's manufacturing.

This report by a committee of the Manufacturing Studies Board (a group of businessmen reinforced by professors and retired military officers) is in response to a request by the US Army Materiel Command, Alexandria, Virginia. The committee found that "U.S. industrial preparedness is eroding. Reductions in the number of defense contractors and sub-contractors have coincided with the threatened loss of entire industries, such as those that manufacture bearings, some machine tools and computer components. The United States can no longer count on having domestic product and process technology to produce technologically superior weapons."

While the specter of nuclear war fades, the intensity of conventional war continues to increase. Such wars, with their massive expenditures of munitions and other supplies and their great loss of equipment, place a heavy burden on the economy's ability to rapidly expand production to meet the demand. Surge capacity—the ability to immediately boost production from existing facilities—is quite limited and crippled by bottlenecks. Mobilization—the ability to convert facilities from other uses and to build new facilities—is hindered by the specialized nature and high capital requirements of modern weapons production, as well as by lack of advanced planning.

The committee offers a list of suggestions which includes government funds for advanced, flexible manufacturing processes; peacetime stockpiling; a preference for domestic over imported goods; interchangeable components; and control over foreign-owned plants in the United States. But the real problem is in getting higher political authority to take the problem seriously.

The committee argues that smaller standing forces and reduced defense budgets will require greater surge capacity (the economic version of the National Guard and Reserve). Unfortunately, inattention to industrial preparedness will probably continue until an emergency reveals critical materi-

el shortfalls. Those who espouse the "free trade" philosophy in Washington, DC, have watched the United States' industrial decline with indifference. This thinking is reinforced by the post-Cold War euphoria that discounts the need to worry about large-scale war. However, reports like this one are valuable for they point to a vital element of the grand strategy.

William R. Hawkins, *Hamilton Center for National Strategy, Knoxville, Tennessee*

PARIS KANONEN: The Paris Guns and Project Harp by G. V. Bull and C. H. Murphy. 246 pages. Verlag E. S. Mittler & Sohn, GmbH, Herford und Bonn, Federal Republic of Germany. 1990. \$60.00.

In the waning months of World War I, the German army stunned the world by shelling Paris with cannon artillery (Paris guns) from the unbelievable range of more than 120 kilometers. As impressive as that feat was, the initial shock soon wore off, and the final military results were far less than what the German High Command had hoped for.

When the war ended, the Germans destroyed their three (at least) long-range Paris guns, along with all of the test and development records, to prevent them from falling into Allied hands. During the interwar years, the *Reichswehr* kept a tight security clamp on the guns and even prosecuted several people for talking about them. As a result, much of what is known about the Paris guns is based on speculation, hearsay and myth.

G. V. Bull and C. H. Murphy, ordnance experts who probably know more about long-range guns than anyone else in the world, have produced a brilliant new analysis of the Paris guns. During the 1960s, they were the project leaders on the Canadian-American High Altitude Research Program (HARP) who used conventional gun tubes to launch atmospheric research probes to altitudes of more than 180 kilometers. They have recovered a previously suppressed and long-lost manuscript by Dr. Fritz Rausenberger, the director of artillery development and production for the Krupp firm at the time the big guns were built. Using the "fall of shot" data collected by previous Paris gun investigators, the Rausenberger manuscript and modern computer analysis techniques, Bull and Murphy reveal how the Krupp team accomplished the still impressive technical feats.

There is a tragic footnote to the story of Project Harp; one that has become intertwined with today's headlines. After Project Harp ended in 1968, Bull established a Brussels-based ordnance

design consulting firm, Space Research Corporation, that designed the South African G5 155mm howitzer Iraq used in its war with Iran. In 1980, Bull spent four months in jail for violating US export laws and the US arms embargo against South Africa. According to a recent issue of *Jane's Defence Weekly*, Bull was also the technical expert behind a major project to upgrade Iraqi artillery. That effort included the development of a 1,000mm supergun known as Project *Babylon*. Bull's 1988 contract with Iraq also included the development of a new 155mm self-propelled (SP) gun and a 210mm SP gun with a range of more than 57 kilometers. British Customs uncovered the supergun project in April 1990. The previous month Bull was shot to death by unknown assailants outside his apartment in Brussels, Belgium.

Published in English, *Paris Kanonen* is well-illustrated with photographs, charts and tables. Some sections are highly technical and difficult to wade through. Despite Bull's somewhat questionable political entanglements—which might well have cost him his life—this book is a major technical and historical contribution.

MAJ David T. Zabecki, USAR,
Bexbach, Federal Republic of Germany

ATTRITION: Forecasting Battle Casualties and Equipment Losses in Modern War by Trevor N. Dupuy. 176 pages. Hero Books, Fairfax, VA. 1990. \$19.95 paperback.

How can you reliably estimate casualties? The recent debate on the Gulf War has highlighted the pertinence of this question. Decision makers want to know the potential costs of military operations before the plans are executed. Those familiar with retired US Army Colonel Trevor N. Dupuy's previous books know that he believes history provides the best information on which to base such estimates.

Dupuy defines attrition as a reduction in the number of personnel, weapons and equipment in a military unit, emphasizing the personnel attrition. He also defines terms and reviews the personnel and equipment evacuation procedures. The trade-offs associated with various evacuation policies are discussed from a commander's viewpoint.

Next, he reviews the historical trends of attrition and shows that increases in weapon lethality have been more than offset by greater dispersion on the battlefield, with the result that daily battle casualty rates have continuously declined since 1600. Winners generally have lower casualty rates than losers and larger forces have lower casualty rates than

smaller forces under similar conditions, although the disproportionate casualties suffered by infantrymen throughout history is demonstrated and explained. However, force ratios are only one determinant of casualty rates. Dupuy notes 23 varieties of attrition that can affect casualty rates.

While readers of military history tend to shy away from quantitative methods, readers are given the basic tools to perform their own calculations. Dupuy's step-by-step methodology does not require advanced math skills. Safely tucked away at the end of the book, the equations are clearly explained. The challenge in applying his formulas is in gathering accurate data, not in performing the computations.

Best of all, Dupuy provides a "hands-on" section to his book. He takes several historical battles, ranging from Austerlitz in 1805 to Panama in 1990, and compares his formulas with the actual data. Before going to press, he added a section using the proposed liberation of Kuwait to illustrate his model. Since Kuwait has been liberated, it will be interesting to compare the actual results with the projection.

Attrition: Forecasting Battle Casualties and Equipment Losses in Modern War easily fits into a BDU (battle dress uniform) cargo pocket and is a useful tool for any combat service support planner who has to make casualty/loss estimates. It is also useful to the historian and the wargamer. Read it both for enjoyment and professional development.

CPT John A. Hamilton Jr., USA, US Army
Computer Science School, Fort Gordon, Georgia

THE MILITARY COMMITTEE OF THE NORTH ATLANTIC ALLIANCE: A Study of Structure and Strategy by Douglas L. Bland. 288 pages. Praeger Publishers, Westport, CT. 1991. \$47.95.

How should NATO adapt militarily to a changing security environment? Douglas L. Bland, a lieutenant colonel in the Canadian armed forces, answers with an intriguing proposal to "return to a regional military structure with a strategy of reinforcement." This radical reorganization would eliminate "Allied Command Europe [ACE], the office of SACEUR [Supreme Allied Commander Europe] . . . SHAPE [Supreme Headquarters Allied Powers Europe]" and pass the "responsibility for the planning, organizing, and conducting of European defense to European regional commanders."

This work is particularly useful in three areas. First, it gives a succinct and lucid description of the inherent tension that exists in an alliance of co-equal nations between the recognition of political

sovereignty and the requirement for subordination in a cohesive and integrated military strategy. Therein, Bland explains, is why NATO's military structure is driven more by politics than by military necessity.

Second, there is an insightful discussion of the various problems created by the changing political and security realities in Europe. What should be the role of the United States? Should there be a European pillar? How should NATO respond to out-of-area interests? How these questions are answered has profound implications for the future of the alliance.

The third and strongest contribution of this book is a historical analysis of alliance structure and planning. Bland examines the French and British alliances during World War I and at the start of World War II, and the Allies during World War II;

traces the development of the initial postwar alliance, the Western European Union; and concludes with the evolution of NATO to its present structure. He uses this analysis as a basis for deriving lessons about alliance structure and strategy.

Unfortunately, the evidence does not lead to Bland's conclusion that the military committee should be the key military organ of NATO in place of ACE. Nor does Bland offer a convincing explanation of how the new regional structure, the Foulkes Plan resurrected, would be superior in practice to the current arrangement. He also gives no picture of the threat(s) against which the future NATO should plan.

While firmly believing it is crucial to preserve US participation in NATO in the post-Cold War era, Bland proposes that the pressures to Europeanize NATO in the face of a diminished Soviet threat

PASS IN REVIEW

THE CIVIL WAR: An Illustrated History by Geoffrey C. Ward with Ric Burns and Ken Burns. 426 pages. Alfred E. Knopf, Inc., New York. 1990. \$50.00.

DIRTY LITTLE SECRETS: Military Information You're Not Supposed to Know by James F. Dunnigan and Albert A. Nofi. 468 pages. William Morrow & Co., Inc., New York. 1990. \$19.95.

DEFENSE ACQUISITION MANAGEMENT by George Sammet Jr. and David E. Green. 498 pages. Florida Atlantic University Press, Gainesville, FL. 1990. \$59.95.

This companion volume to the acclaimed Public Broadcasting Service series covers the "crossroads of our being" from the significant causes of the war through the victory review of the "Grand Army of the Republic." The eloquent text borrows heavily from the words of men and women who lived the conflict and is accompanied by a wonderful collection of period photographs. Campaign overviews are necessarily brief and contain some minor factual errors, but this is still as delightful and moving a general treatment of the war as you will find.—LTC John I. Boxberger, USA, *Combat Studies Institute, USACGSC*

An excellent book. Clearly a "one of a kind" offering for those who want to know more about the world military establishment and how it has evolved. It demonstrates how little most people know about our military and other militaries of the world. Reading it during the initial stages of Operation *Desert Storm*, I found many of the authors' predictions on "smart weapons" quite accurate, particularly the billing given the Scud missile and the Patriot. It does not, of course, reflect the changes in the East-West situation or in Iraq's position and equipment status.—CPT David D. Moran, USA, *1-212th Aviation, Aviation Training Brigade, Aviation Center, Fort Rucker, Alabama*

Retired Army Lieutenant General George Sammet Jr., former head of the US Army Materiel Command, and retired Army Colonel David E. Green, former program manager for the Stinger missile, assert that they are writing their book for everyone: taxpayers, students, contractors, the military and project managers. They provide background on the entire defense industry and on the workings of individual contractors. Everything in the acquisition process is covered from management and controls to negotiations, training and ethics. It is the best one-source overview of the acquisition process I have seen and belongs on the shelf of anyone who wants a self-contained reference book giving a realistic and practical view of the entire acquisition process.—Charles Dale, *American University, Washington, DC*

will be so great as to preclude continued US integration under the existing structure. Although he does not clinch his argument, Bland has produced a work that is timely and thoughtful. It is a welcome addition to the literature on the subject and well worth reading.

LTC Douglas D. Brisson, USA, Office of the Chief of Staff, US Army, Washington, DC

LIGHT FORCES & THE FUTURE OF U.S. MILITARY STRATEGY by Michael J. Mazarr. 180 pages. Brassey's (US), Inc., McLean, VA. 1990. \$32.00.

While tensions between the two superpowers abate, the resulting multipolar world emerging from the Cold War is laden with opportunities for conflicts. The result is a US Army facing profound

changes in orientation, strategy and force composition.

Light Forces & the Future of U.S. Military Strategy examines the Army's future by looking at what is perhaps the most important issue it faces—the balance of light-, heavy- and medium-weight units in its force structure—and investigates how light units can best respond to these changes.

Michael J. Mazarr argues that flexible, but light, power-projection forces are indeed necessary components of the US force structure. He persuasively argues that they represent a positive first step in the direction in which the Army must eventually move to meet the challenge of tomorrow's "small wars."

This book argues for achieving flexibility by acquiring a spectrum of specialized forces rather than a single general purpose force and for linking those forces into "a cohesive web of force structure."

HOW TO DEFEAT SADDAM HUSSEIN: Scenarios and Strategies for the Gulf War by Trevor N. Dupuy, Curt Johnson, David L. Bongard and Arnold C. Dupuy. 202 pages. Warner Books, Inc., New York. 1991. \$4.95 paperback.

The familiar military historian, retired Colonel Trevor N. Dupuy, has expanded his December 1990 congressional testimony given to verify scenarios and strategies to defeat Saddam Hussein. Events have since shown that Dupuy's concepts were relatively accurate which further enhances his reputation as one of the best of the war commentators. Uncharacteristically, his casualty count prediction is off due to the miraculous collapse of the Iraqi military. This in no way detracts from the overall value of this book.—LTC John R. Finch, USA, *Combat Studies Institute, USACGSC*

FIREFIGHT AT YECHON: Courage and Racism in the Korean War by Charles M. Bussey. 264 pages. Brassey's (US), Inc., McLean, VA. 1991. \$21.95.

Firefight at Yechon is the first-person account of retired US Army Lieutenant Colonel Charles M. Bussey's tenure as commander of the 77th Engineer Combat Company during the early days of the Korean War. Bussey's story is impressive, as are the generally glossed-over accomplishments of his company. The author's zeal to vindicate the reputation of the black soldier during the Korean War, however, disrupts an otherwise readable and informative book. Bussey's periodic editorial comments also detract from this otherwise professional account of the company's early combat experiences.—CPT Mark T. Lisi, USA, *Combined Arms Command, Combat Developments, Fort Leavenworth, Kansas*

NATIONAL IMPLEMENTATION OF FUTURE CHEMICAL WEAPONS CONVENTION. Edited by Thomas Stock and Ronald Sutherland. 171 pages. Oxford University Press, New York. 1990. \$39.95.

Chemical warfare is riding one of its recurring crests. In this serious and complex book, the Stockholm International Peace Research Institute addresses all of the measures—technical, organizational and political—necessary to nationally implement a chemical weapons convention, one that has been underconsideration for more than 30 years. Representatives of nine nations present the situations in their own countries. Kyle B. Olson, associate director of the Chemical Manufacturers Association, provides input for the United States. Included are the range of options and an analysis of obligations, as outlined in the draft convention, necessary for each national authority.—Brooks E. Kleber, *Newport News, Virginia*

However, as the current events surrounding Operation *Desert Shield/Storm* vividly illustrate, a dilemma for the light infantry division exists. It might be the least likely to be effective in the "show-the-flag" missions for which it was created, and it "might be too weak to engage in true war fighting at higher levels of conflict." The experience of past wars points to a dominant lesson: When light units are used in combat because their capabilities and advantages fit the requirements, they perform well.

In spite of the author's intriguing discussion of the historical development of the light infantry division and the well-documented, but sometimes controversial, comparison of the relative merits of light, medium and heavy forces, the real issue is the lack of a coherent strategy on which force structure can be built. Mazarr, perhaps out of frustration at the unlikely emergence of a clear-cut strategy, proposes the creation of a "middleweight" force—one easier to move than a heavy force but with much more firepower and battlefield mobility than today's light infantry divisions. His innovative proposals are worth a thorough examination, and his book is valuable reading for those who would ensure that the United States maintains an Army capable of dealing with the uncertain future.

Mazarr raises a few unnecessary hackles with his pejorative comments which may not be particularly well suited for an otherwise scholarly effort. Nevertheless, the research is good, and the analysis leads to provocative recommendations. The book is a significant contribution to the important endeavor of examining the future defense needs of the nation.

COL Jimmie F. Holt, USA, Deputy Chief of Staff for Operations, US Army Special Operations Command, Fort Bragg, North Carolina

BOUNCING BACK: How a Heroic Band of POWs Survived Vietnam by Geoffrey Norman. 248 pages. Houghton Mifflin Co., Boston, MA. 1990. \$19.95.

He was not alone. Realizing this was the one thing, says US Air Force pilot Al Stafford, that got him through the grueling years of captivity as a prisoner of war (POW) in Vietnam. *Bouncing Back* tells the realistic and sensitive story of Stafford and other POWs from the Vietnam War. The reader journeys within the mind of the POW and the life of the camp. The presentation centers on the thoughts, feelings and commitment of the POWs to "bounce back" from their circumstances and describes the intricate and ingenious methods the POWs in each camp used to keep in contact with each other. It was this contact that saved them.

For many, shame, not pain, was the worst part of the early days of captivity. The prisoners were not prepared for the loneliness and despair of captivity. They learned to share an intimacy with each other that helped make survival in the camp possible but which was not found upon their release and reentry to freedom.

"Bouncing Back" is the name given by POW Jeremiah Denton to the policy of rallying one's energy and spirit. The term became widely accepted and part of survival training for others entering combat. The essential point was not to give up completely once you had broken, but to rally.

"The formulation of the Bounce Back policy was the conceptual and spiritual answer POWs had been looking for, and they clung to it like a life raft, in spite of the fact that it was in many ways alien to the military way of thinking."

Bouncing Back tells the story of the POWs of the "Fourth Allied POW Air Wing"—how these men, under extreme hardships and deprivation, won the fight for their lives. It is a powerful account of their experiences and an inspiring testimony to the human spirit. Well-written and hard to put down, it is a book worth reading and sharing.

MAJ Kenneth M. Rupp, USA, Academy of Health Sciences, Fort Sam Houston, Texas

BLOOD AND RAGE: The Story of the Japanese Red Army by William R. Farrell. 265 pages. Lexington Books, Lexington, MA. 1990. \$21.95.

Terrorist groups are a feature of the modern age, but what forces cause these groups to form and become a threat to their own societies, as well as to the United States? William R. Farrell examines this question by looking at the historical factors and aspects of Japanese society that gave rise to student radicalism, out of which came one of the better known terrorist groups, the Japanese Red Army (JRA).

A spin-off from the mainstream of student radical groups, the JRA advocated more active measures to achieve such goals as the abolition of the Japan-US Joint Security Treaty. The JRA scored some early successes with the hijacking of a JAL airliner to North Korea and some bank robberies. These were, however, followed by severe setbacks due to the efficient Japanese National Police and a bloody internal purge.

Another faction of the JRA established itself in the Middle East. Under the leadership of Shigenobu Fusako, it allied itself with radical Palestinian groups. This faction was responsible for the infamous Lod Airport massacre in Tel Aviv, Israel, in 1972. Less spectacular but more rewarding activi-

ties include seizure of hostages from embassies or consulates in Kuwait; Amsterdam, Holland; and Kuala Lumpur, Malaysia, which resulted in the release of imprisoned JRA members and cash for the JRA treasury. As Farrell points out, the JRA was one of the more active and effective terrorist groups, and it may still have the capability to inflict more hurt upon its "enemies" and the world.

Blood and Rage is a well-written and informative account of the genesis and development of a terrorist group. While making allowances for the peculiar cultural and political circumstances in Japan, the book gives insight into the thinking and operation of these organizations. *Blood and Rage* is recommended to anyone with an interest in terrorism, counterterrorism and low-intensity conflict.

COL Wayne Kohlwes, USAR, Fredericksburg, Virginia

GUADALCANAL by Richard B. Frank. 800 pages. Random House, Inc., New York. 1990. \$34.95.

In his recently published book, *Brute Force*, John Ellis uses the five-month struggle for Guadalcanal as an illustration that what really enabled the Allies to triumph in World War II was the overwhelming mass of materiel that allowed the pursuit of a strategy of attrition to which operational flair and tactical skill were largely irrelevant. Like most historians with a single, all-embracing thesis, Ellis may push his argument too far, but it is a powerful argument and one that serious military historians must address.

Richard B. Frank's new account of the Battle of Guadalcanal, the first analysis in several decades and one that draws fully on the extensive Japanese sources, both illustrates and corrects Ellis' thesis. Frank explores the improvised strategy—as much an attempt by Admiral Ernest J. King, commander in chief of the US Fleet, to preempt General Douglas MacArthur as to forestall the Japanese—that set the campaign in motion. The difficulty of coordinating arms and services, and mistakes by US commanders—are clearly and objectively recounted. The hard-won US victory, although expensive, exacted a price from the Japanese greater than they could afford to pay, especially in irreplaceable carrier pilots.

Frank provides a case study illustration of Ellis' argument, but makes his own case as well, that there was a great deal of tactical flair shown, both afloat and ashore. The weakness of the "attrition did it" argument is that it slights the fact that in a prolonged struggle, painful experiences hone the skills that enable resources to be deployed most effectively. The Battle of Guadalcanal was not merely a successful wearing down of the Japanese, it was a learning experience as well. Frank's clear, thor-

ough narrative lays this out in great detail and reminds us of why the Battle of Guadalcanal became one of the epic struggles of the Pacific war.

Raymond Callahan, University of Delaware,
Newark, Delaware

ON POLITICAL WAR by Paul A. Smith Jr. 277 pages. National Defense University Press, Washington, DC (Available from Superintendent of Documents, US Government Printing Office, Washington, DC.) 1989. \$9.50.

Paul A. Smith Jr. is a former senior research fellow at the National Defense University and chief editor of *Problems of Communism*. In this book, he offers an analysis of propaganda from Joshua's trumpets at Jericho to Mikhail Gorbachev's reforms. He also offers a brief theory of propaganda which he prefers to call "political war." In his opinion, there are three general categories of war: nuclear, conventional and political. While the dangers of nuclear and even conventional war may be receding, political war remains as bitter and lethal as before.

Many readers will enjoy the historical survey of propaganda. The treatment of Nazism and Marxism-Leninism is especially lively and succinct. The author's style is apt and ingenious, spiced with quotations and pictorial material. Smith's thesis, on the other hand, may strike some readers as overdrawn and highly debatable.

It is not clear why Smith thinks propaganda should be called "political war" or whether the expression has meaning. War, after all, is organized violence. War does not imply the attempt to inflame, cajole or hoodwink people. Rather, war implies killing and destruction—the primary tasks military forces are expected to perform. The phrase "political war," like the hackneyed phrase "war of words," glosses over an important distinction. One does not wage war with words but, rather, with bombs and bullets.

The book's exclusive focus on propaganda causes a myopic view of the Cold War. Certainly, the conflict between communism and the free world is not a clash between Soviet propaganda, agencies and the Voice of America, however salutary its efforts. The United States is not persuasive because it puts out good propaganda but because it offers freedom of speech and press. In this atmosphere of freedom, truth will always prevail. Truth is usually not simple and seldom accords exactly with government policy, but it is persuasive. During the current revolution in Eastern Europe, a breath of freedom blew decades of propaganda away, so powerful is truth.

MAJ Bruce R. Pirnie, USA,
Center of Military History, Washington, DC

NUCLEAR AMBITIONS: The Spread of Nuclear Weapons, 1989-1990 by Leonard S. Spector with Jacqueline R. Smith. 450 pages. Westview Press, Boulder, CO. 1990. \$54.00 clothbound. \$12.95 paperback.

This is the fifth and most detailed of the annual reports on nuclear proliferation published by the Carnegie Endowment for International Peace. It is particularly important since among the several causes of the Gulf War was the fear that if Iraq were not confronted, it would soon acquire nuclear weapons and become much more dangerous. Leonard S. Spector clearly states that Iraq was indeed working hard to develop a nuclear weapons capability.

Iraq is one of 10 nations whose nuclear programs are examined. The others are India, Pakistan, Israel, Libya, Iran, Argentina, Brazil, North Korea and South Africa. In addition to nuclear programs, attention is also paid to chemical, biological, ballistic missile and nuclear submarine programs. Those nations engaged in nuclear weapons research are usually also engaged in other areas of advanced military technology. Spector is concerned because Third World arms races "increasingly involve countries hostile to the United States."

This trend should not be surprising. Throughout history, political ambitions expand along with economic capabilities. As a number of developing nations emerge from the Third World, it can be expected that they will seek positions of regional, even global, power that will require the support of modern military forces. It would also be natural that the United States and other developed nations that now dominate world politics would want to limit the rise of any new military powers; however, such limiting efforts have been less than successful. Spector gives details of nations (open or covert) that "have played a central role in advancing the nuclear weapon[s] capabilities of Pakistan, India, Argentina, Brazil and Iraq." In addition, these "second-tier" states are engaged in cooperative projects and trade in armaments and advanced technology outside the purview of the developed nations.

Maps are provided showing some but, for some reason, not all of the nuclear-relevant sites in each country studied. There are also a number of useful tables and appendixes that give quick references to data on Third World ballistic missiles, the export potential of nuclear suppliers, international agreements and safeguard activities, among other topics. This is an important volume in an important continuing series, given the form the "new world order" is taking.

William R. Hawkins, Hamilton Center for National Strategy, Knoxville, Tennessee

PITY THE NATION: The Abduction of Lebanon by Robert Fisk. 678 pages. Anthenum, New York. 1990. \$24.95.

Robert Fisk's definitive description of the last 15 years of Lebanon's civil war has meaning well beyond that country's boundaries. Operation *Desert Shield/Storm* will, in time, resolve the most overt threat to regional stability. It will not, however, advance a solution to the Palestinian issue, argueably the most serious long-term threat.

The plight of displaced Palestinians and Israel's quest for security remain underlying causes of Lebanon's travails, along with rival religious and political factionalism. Fisk, a former *London Times* reporter, is at his best when he describes events firsthand. His reporting conveys all the violence, confusion and death on the modern battlefield. He is less successful, however, in analyzing the motives and actions of external players, particularly the Americans and Iranians.

The book underscores the risks and consequences of foreign ambition applied through surrogates. Fisk details Israel's shallow denials in deflecting responsibility for the Sabra and Chatila refugee camp massacres carried out by their Phalangist clients. Similarly, Iran's shadowy role in the actions of the Islamic jihad pursued by Hezbollah defies close inspection.

The seemingly limitless barbarism recorded by the author graphically illustrates the differences between Arab and Western cultures. Hostage taking was an Arab practice before the crusades. So was sheltering military targets within the shadow of valued real estate. As the author notes, placement of Palestine Liberation Organization gun emplacements adjacent to the hospitals and schools failed to deter Israel's attacks. These same tactics were present in Kuwait and can be expected in any future conflicts involving extremist Arab states. Fisk notes that the concept of collateral damage from military targets is totally absent from actions he witnessed. Indeed, in many cases, it is precisely the civilian population that appears to be the target.

Less attention is given to those political, social and economic pressures that drove such 1960s "coffee house" liberals as Walid Jumblatt to become brutal warlords over the succeeding decades. Efforts of the Christian Maronite minority to maintain control are not unlike those of Northern Ireland's Protestants about which Fisk has also written.

This long book is not academic history; it is eyewitness news. It provides a valuable context for understanding the continuing tragedy that is Lebanon. This deeply disturbing work warrants the attention of military professionals concerned with our future prospects in the Middle East.

Col John W. Messer, USAR, Northport, New York

ARAFAT: In the Eyes of the Beholder by Janet Wallach and John Wallach. 465 pages. Carol Publishing Group, New York. 1990. \$19.95.

The authors, Janet Wallach and John Wallach, have eschewed a conventional biography in favor of presenting the evaluations of individuals who have worked with or against Yasser Arafat throughout his career. In this novel approach, the authors have avoided merely publishing interviews or disjointed speeches about the Palestine Liberation Organization (PLO) chairman. The result is phenomenally good.

Arafat is deliberately vague about his origins and private life. The authors' evaluation is that he insists on this privacy to add to his mystique. Statements gleaned from exhaustive interviews with Arafat, as late as fall 1990, can never be taken at face value. It is clear from the authors' research that Arafat is cunning, manipulative and evasive. He is also very, very good at what he does.

What he does is manipulate the various Arab states to the benefit of the PLO and the factions within the PLO to maintain his own power. The Arab countries support a Palestinian state but not a Palestine for Palestinians. They support a Palestine for Syria, a Palestine for Jordan and a Palestine for Arab unity under the leadership of various contenders.

The evaluations of these various contenders is colored by their success in using Arafat and, more

often, his success in using them. In presenting the opinions of these parties, the authors have sketched the background of their relationship with Arafat. This practice provides the reader with a working knowledge of Middle East history. By exploring a variety of viewpoints and the prejudices behind them the authors have created an authoritative work detailing the covert workings of PLO diplomacy.

Of equal interest is the authors' treatment of the PLO's financial apparatus. Money is obtained from PLO businesses and through direct payments from friendly states, most recently Iraq. All money comes directly through Arafat. By not delegating financial responsibility, Arafat has made himself indispensable. He then deals with such surprising confederates as ultra-Orthodox Jews and Israeli banks to send money to the PLO network in Israel.

The authors' exhaustive and sympathetic treatment does not give rise to confidence in Arafat's promises to abandon terrorism and recognize Israel. Arafat has made and broken agreements with friends and foes alike. He is a chameleon who changes ideology with the needs of the moment. That his current ally is Iraq indicates that he is a person to be understood rather than trusted. *Arafat* is an excellent step in this direction.

Kevin L. Jamison, Kansas City, Missouri

A Call for *Desert Storm/Shield* Manuscripts

Military Review is seeking articles about mobilization, deployment and combat operations with transcripts of important documents and a Gulf War chronology for a theme issue on Operation *Desert Shield/Storm*. We welcome manuscripts on any phase of this critical operation.

Since the mid-1980s, *Military Review* has used the theme approach to structure its editorial content and to channel discussion of important military issues. Many of our best articles have been the unsolicited products of our central readership. Upcoming issues will feature these themes:

Low Intensity Conflict	Role of the Reserve Components
Contingency Operations	Division/Corps Operations
Special Operations Forces	The Changing Army
NATO/USAREUR	The Army in Society, including such topics
Strategy	as Women in the Army, Equal Opportunity
Threat/Soviet Update	Military-Media Relationships, etc.

Additionally, we hold space in each issue for "wild card" articles and we invite prospective authors on any and all topics to query us with article ideas. Send inquiries to Editor in Chief, *Military Review*, Funston Hall, Fort Leavenworth, Kansas, 66027-6910 or call (913) 684-5642 or AUTOVON 552-5642.



Military Review



WRITING CONTEST

Through the generosity and continued support of the Command and General Staff Officers Course Class of 1985, **Military Review** announces its annual writing contest.

Entries on the topic, "The Army in American Society," will be accepted through 15 July 1991. The author of the winning manuscript will receive a \$500 cash-award and the manuscript will be published in **Military Review** in the fall of this year. The award for second place is \$200 and for third place, \$100. **All** entries will be considered for publication in **Military Review**.

The topic area is large and covers a broad range of issues having impact upon the American public as a whole. Included are such subjects as: values, ethics and morality, women in combat, public support for the military, the Volunteer Army, Selective Service, citizen-soldiers in the Total Force, AIDS, the military-media relationship, equal opportunity, the Army's role in drug interdiction and alcohol and drug abuse.

Manuscripts must be original and not previously offered elsewhere for publication. They should be between 2,000 and 3,000 words and typed double-spaced. A writer's guide appeared in our January 1991 issue and is available upon request. Please clearly indicate that your manuscript is for the writing contest.

Send entries to **Military Review**, US Army Command and General Staff College, Funston Hall, Fort Leavenworth, KS 66027-6910.

LOGISTICS/SUSTAINMENT

Dedicated to the men and women of *DESERT SHIELD/DESERT STORM* who performed the key sustainment functions:

Arming



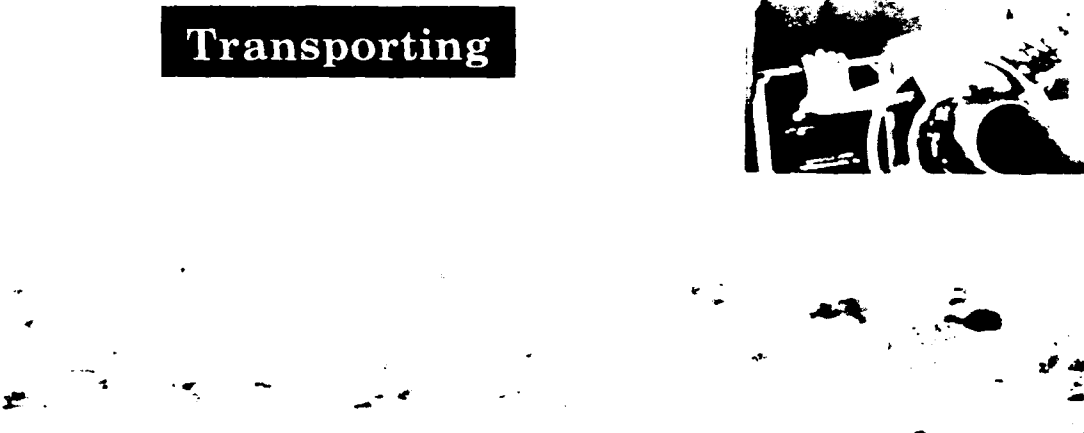
Manning



Fueling



Transporting



Protecting



Fixing



"I can't recall any time in the annals of military history when this number of forces have moved over this distance to put themselves in a position to be able to attack. . . .

"We literally moved thousands and thousands of tons of fuel, of ammunition, of spare parts, of water and of food . . . because we wanted to have enough supplies on hand so that if we launched this and if we got into a slugfest battle, which we very easily could have gotten into, we'd have enough supplies to last for 60 days."

GEN H. Norman Schwarzkopf

CINC, CENTCOM
27 February 1991
Riyadh, Saudi Arabia